

**THE PARATHYROID GLANDS
AND
METABOLIC BONE DISEASE
*SELECTED STUDIES***

THE PARATHYROID GLANDS AND METABOLIC BONE DISEASE SELECTED STUDIES

BY

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PREFACE AND CRITICAL REVIEW COMBINED ³

On starting to write the preface, it occurred to the authors that it might be well to incorporate their own critical review. The thought existed, it must be admitted, that, by pointing out the shortcomings in particular, the wind might be taken out of the sails of those of the reviewers who will be impressed largely by the faults of this work. In other words, we are incorporating a little prophylactic criticism.

What is meant by the last two words in the title, "Selected Studies?" What studies were selected? Were they selected in order that the final presentation might be a systematic covering of the entire field? Were they selected for clinical importance? No, they were selected because the authors had had some first-hand experience with them and felt that they might have something to contribute. To this fact are to be attributed largely the many glaring hiatuses on the one hand, the over-emphasis of certain other features on the other hand.

Where one of the "selected studies" had previously been published, the authors did not hesitate to incorporate large sections of it almost verbatim, they attempted with every section, however, to bring it up to date and to integrate it closely with the new data.

For those who are not familiar with previous publications from our group, it might be stated that we are not content merely to present data, we attempt, where possible, to develop an hypothesis upon which to hang the observations. The hypotheses—it almost follows—are subject to change without notice.

The authors are aware of some of the liberties they have taken with the English language. They have used many medical colloquialisms. They have followed the current vogue in medical writing of using nouns for adjectives. It is more convenient, if not such good English, to use the expression "serum phosphorus" instead of "level of phosphorus in the serum." The German language, by running several nouns together into one word, can cope with the difficulty more simply and accurately; it would employ the expression, "*Serumphosphorgehalt*."

In a way, this work represents an incomplete summary of studies on calcium metabolism carried out on the Metabolic Ward (Ward 4) of the Massachusetts General Hospital over a period of 24 years. Researchers have come and researchers have gone, but the studies on calcium metabolism have continued uninterruptedly. Indeed, neither of the present authors was a charter member of this group of metabolic investigators, credit for the initial impetus belongs to Dr. Joseph C. Aub and his associates for their now classical studies on lead poisoning [Aub, Fairhall, Minot, and Reznikoff (1925)].

The studies here selected have been carried out with the help of a large number of collaborators, most of whom appear at one time or another as joint authors of our previously published reports. The more recent work which has not been published has been carried out in conjunction with Dr. Frederic C. Bartter, Dr. Charles H. Burnett, Dr. Russell W. Fraser, Dr. Anne P. Forbes, Dr. Laurance W. Kinsell, Dr. Harry F. Klinefelter, Jr., Dr. William Parson, Dr. Patricia Smith Benedict, and Dr. Hirsh W. Sulkowitch. To these names must be added those of Evelyn Carroll, Lowell D. Cox, Eleanor F. Dempsey, Elizabeth C. Donaldson, Esther Bloomberg Gordon, Grace C. Griswold, Priscilla White Lindsay, Marian MacAulay, Dorothy Bryant Nodine, Robin M. Suby, and Shirley L. Wells, to whom we are grateful for technical assistance.

Of the good and hitherto unpublished observations contained in this book, many stem from that eminent pathologist, the late Professor Jacob Erdheim of Vienna, at whose elbow during the year of 1930 one of us (F. A.) had the good fortune of standing and picking up the pearls. We were pleased to note that Dr. Joseph P. Weinmann and Dr. Harry Sicher, in their recently published excellent book entitled, "Bone and Bones" [The C. V. Mosby Company (1947)], dedicated their work to this renowned Viennese investigator. Professor Erdheim made many fundamental observations on the pathology and functions of the parathyroid glands and on various forms of bone disease; to him belongs the credit for first connecting the parathyroids with calcium metabolism when in 1906, he showed that parathyroidectomy resulted in *a*-calcification of the dentine of rats' teeth.

A number of professional colleagues in the Massachusetts General Hospital and elsewhere have generously assisted in many ways in the studies herein reported. Although it is impossible to name all of these individuals, we want to thank all of them, and especially those listed below:

Dr. Alexander P. Aitken (for referring Case No. 4 to us for study), Dr. W. E. Anspach (for supplying further data on his cases of hyperparathyroidism), Dr. Joseph C. Aub and the editor of the *Journal of Clinical Investigation* (for permission to rechart and publish Fig. 125), Dr. David P. Barr and the editor of the *American Journal of the Medical Sciences* (for permission to reproduce Fig. 30),

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The investigations herein reported have received financial support from many sources. Many of these have been acknowledged in previous publications. The expenses of the more recent unpublished studies were defrayed by grants from the Josiah Macy, Jr. Foundation, the Rockefeller Foundation, the National Research Council (Committee for Research in the Problems of Sex), the National Advisory Cancer Council, the American Cancer Society on the recommendation of the Committee on Growth of the National Research Council, and the Mary Gove Pittman Fund. A bed supported by the Mallinckrodt Chemical Company on the Metabolic Ward was used for part of these studies. It is a pleasure for us to acknowledge this support.

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Boston, Massachusetts
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- (vii) the Board of Inspection, and
- (viii) such other bodies of the University as may be declared by the Statutes to be the authorities of the University.

**The Senate—
Composition and
term of office.**

*18. (1) The Senate shall consist of the following persons, namely:—

CLASS I—Ex-officio Members.

- (i) the Chancellor,
- (ii) the Vice-Chancellor,
- (iii) the Registrar,
- (iv) the Deans of Faculties,
- (v) the Minister of Education in Rajasthan,
- (vi) the Director of Education in Rajasthan,
- (vii) the Director of Medical Services in Rajasthan,
- (viii) the Director of Agriculture in Rajasthan,
- (ix) the Director of Industries in Rajasthan,
- (x) the Chief Engineer (Buildings and Roads) in Rajasthan,
- (xi) the Members of the Syndicate,
- (xii) the Heads of University Departments of the status of a Professor or a Reader,
- (xiii) the Principals of post-graduate colleges, and
- (xiv) such other ex-officio members, not exceeding four, as may be provided for in the Statutes.

CLASS II—Life Members.

- (xv) Every person, who has made a donation to the University at any one time of an amount of, or of property valued at, one lakh of rupees or more, or a representative nominated in this behalf by such person during his life time, provided that in the case of the donor being a corporate body the membership shall last for a period of 20 years from the date of acceptance by the University of such donation.

CLASS III—*Other Members.*

- (xvi) Five persons elected by the Academic Council from among its members,
- (xvii) Five persons, not being teachers, elected by the registered graduates of the University from among themselves,
- (xviii) Five persons, of whom at least two shall be principals of degree colleges, elected by the principals of colleges other than post-graduate colleges, from among themselves,
- (xix) One Principal of a Medical College, nominated in rotation by the Vice-Chancellor,
- (xx) One Principal of an Engineering College, nominated in rotation by the Vice-Chancellor,
- (xxi) One Principal of a Teachers' Training College, nominated in rotation by the Vice-Chancellor,
- (xxii) One Principal of an Agricultural College, nominated in rotation by the Vice-Chancellor,
- (xxiii) Five persons elected by teachers of affiliated colleges and approved institutions, other than principals thereof, from among themselves,
- (xxiv) Four Headmasters of high schools nominated by the Education Department of the Government of whom at least one shall be the Headmistress of a girls' high school,
- (xxv) Persons who have rendered distinguished service to education, not exceeding five in number, appointed by the Chancellor,
- (xxvi) Persons not exceeding five in number nominated by Government.

(2) Members of the Senate other than ex-officio members and life members shall hold office for a period of 5 years.

19. (1) The Senate shall, on a date to be fixed by the Vice-Chancellor, meet once a year at a meeting to be called the annual meeting of the Senate.

Meetings of the Senate.

- †(2) The Vice-Chancellor may, whenever he thinks fit, and shall upon a requisition in writing signed by not less than twenty five members of the Senate, convene a special meeting of the Senate.

Functions of the Senate.

20. Subject to the provisions of this Act, the Senate shall perform the following functions:—

- (a) of making Statutes, and of amending and repealing Statutes, subject to confirmation by the Chancellor;
- (b) of considering and cancelling Ordinances; and
- (c) of considering and passing resolutions on the annual report, the annual accounts and the financial estimates;

and shall perform such other functions as may be defined by this Act or the Statutes.

The Syndicate—
Composition and
term of office.

†21. (1) The Syndicate shall be the executive body of the University and shall consist of the following persons, namely:—

- (i) The Vice-Chancellor;
- (ii) the Deans of the Faculties of Arts, Science and Commerce;
- (iii) two Deans of Faculties nominated in rotation by the Vice-Chancellor from the Deans of Faculties other than those of Arts, Science and Commerce;
- (iv) the Director of Education in Rajasthan;
- (v) three persons elected by the Principals of affiliated colleges, other than Intermediate colleges, from amongst themselves;
- (vi) three persons, not being teachers, elected by the Senate from among its members; and
- (vii) two educationists nominated by the Chancellor.

- (2) The term of office of the elected and nominated members of the Syndicate shall be three years

*22. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate shall exercise the following powers and perform the following functions, namely:—

Syndicate—
Functions.

- (a) to make, amend and cancel ordinances;
- (b) to hold, control and administer property and funds of the University;
- (c) to accept, on behalf of the University, donations, bequests or transfers of moveable or immoveable property;
- (d) to administer any funds or resources placed at the disposal of the University for specific purposes;
- (e) to invest monies belonging to the University;
- (f) to enter into, vary, carry out, confirm and cancel contracts on behalf of the University;
- (g) subject to the provisions of this Act and the Statutes, to appoint officers (other than the Chancellor, Vice-Chancellor and Deans of Faculties), teachers, clerical staff and servants of the University, and to define their duties, emoluments and conditions of service and to provide for the filling up of temporary vacancies in their posts;
- (h) to determine the form, provide for the custody, and regulate the use of the Common Seal of the University,
- (i) subject to the Statutes, to inspect and to affiliate, recognise or approve colleges, schools and hostels or institutions, and to withdraw affiliation, recognition or approval from them,
- (j) to arrange for the holding of examinations and publishing results thereof;

- (k) to maintain proper standards of teaching and examination in consultation with the Academic Council;
- (l) to recommend minimum scales of salaries of teachers in colleges and of those teaching the IX and X classes in high schools; and
- (m) to exercise all other powers of the University, not otherwise provided for by this Act or the Statutes.

**Academic Council-
Composition and
term of office.**

*23. (1) The Academic Council shall be the Academic body of the University and shall consist of the following persons, namely:—

- (i) the Vice-Chancellor,
- (ii) the Deans of Faculties,
- (iii) the Heads of University Departments of the status of a Professor or a Reader,
- (iv) the Conveners of the Boards of Studies, and
- (v) five persons, co-opted by the Academic Council who possess special attainments in particular studies and who are not teachers in the University or any affiliated college or recognised school or approved institution.

(2) The term of office of the members of the Academic Council, other than ex-officio members, shall be three years.

**Academic Council-
Functions.**

†23A. (1) The Academic Council shall have control and general regulation of, and be responsible for the maintenance of the standards of teaching and examination within the University.

(2) Without prejudice to the generality of the foregoing provision and subject to such conditions as may be prescribed by or under the provisions of this

*As Amended under the University of Rajputana (Second Amendment) Act, 1950.

†Added by the University of Rajputana (Second Amendment) Act, 1950.

Act, the Academic Council shall exercise the following powers and perform the following functions, namely:—

- (i) subject to the approval of the Syndicate, to make, amend and cancel Regulations laying down courses of study and curricula;
- (ii) to propose to the Syndicate Ordinances concerning admission to the University or to its examinations, courses of study and curricula, schemes of examination, and attendance; provided that proposals regarding courses of study and curricula and schemes of examination shall be made after considering the reports, when necessary, of the Faculty or Faculties concerned;
- (iii) to make proposals regarding the maintenance of standards of teaching and examination;
- (iv) to advise the Syndicate regarding the institution of University teaching posts in particular subjects;
- (v) after considering the recommendations of the Faculty concerned, to advise the Syndicate regarding the institution of Boards of Studies and their strength;
- (vi) to advise the Syndicate regarding University fees;
- (vii) to advise the Syndicate regarding equivalence of examinations and recognition of the examinations of other bodies;
- (viii) to advise the Syndicate regarding the University Library and the appointment of a University Library Committee;
- (ix) to advise the Syndicate regarding the conditions of award and tenure of University scholarships and other benefits;
- (x) to refer matters to Faculties and Boards of Studies,
- (xi) to promote research; and

(xii) to advise the Syndicate regarding all other academic matters.

Faculties—
Number.

*24. The University shall include the faculties of:-

- (1) Arts,
 - (2) Science,
 - (3) Commerce,
 - (4) Law,
 - (5) Medicine and Pharmaceutics,
 - (6) Engineering and Technology,
 - (7) Oriental learning including Ayurved,
 - (8) Education,
 - (9) Agriculture and Forestry,
 - (10) Women's Education,
 - (11) Music and Fine Arts,
- and such other faculties as may be prescribed by the Statutes.

Faculties—
Composition and
term of office.

†24A. (1) The faculties of Arts, Science and Commerce shall consist of the following:—

- (i) The Dean of the Faculty;
- (ii) University Professor and Readers in the subjects assigned to the Faculty;
- (iii) all heads of departments within the Faculty in the colleges affiliated upto the degree standard, provided they have at least 8 years' experience of teaching degree classes in a subject of the Faculty;
- (iv) members co-opted by the Faculty concerned from among teachers in affiliated colleges within the Faculty, the number of such members not to exceed five in the case of the Faculty of Arts and not to exceed two in the case of each of the Faculties of Science and Commerce;

*As Amended under the University of Rajputana (Second Amendment) Act, 1950.

†Added by the University of Rajputana (Second Amendment) Act, 1950

- (v) members co-opted by the Faculty concerned from among persons who are not teachers in the University or in any of its affiliated colleges, the number of such members not to exceed five in the case of the Faculty of Arts and not to exceed three in the case of each of the Faculties of Science and Commerce, and
 - (vi) the Conveners of the Boards of Studies in the Faculty, who are not otherwise included under the foregoing clauses.
- (2) The Faculties of Engineering and Technology, of Medicine and Pharmaceutics and Education shall consist of the following:—
- (i) the Dean of the Faculty;
 - (ii) University Professors and Readers in the subjects assigned to each Faculty,
 - (iii) Heads of departments within each Faculty in degree colleges; and
 - (iv) three persons not being teachers within the Faculty to be co-opted by the Faculty concerned.
- (3) The Faculty of Law shall consist of the following:—
- (i) The Dean of the Faculty;
 - (ii) University Professors and Readers in the subject assigned to the Faculty;
 - (iii) Principals of separate colleges of Law;
 - (iv) the Head of the Department of Law being a whole-time teacher of Law from each college; which is not a separate Law College;
 - (v) two teachers of Law in the University to be co-opted by the Faculty; and
 - (vi) three persons not being teachers in the University or any of its affiliated colleges to be co-opted by the Faculty.

(4) The composition of other Faculties shall be prescribed by the Statutes.

(5) The members of a Faculty, other than ex-officio members, shall hold office for a period of 3 years.

†24B. (1) There shall be a Dean of each Faculty who shall be appointed by the Vice-Chancellor in the following order of preference, namely:—

(a) *For the Faculty of Arts, Science and Commerce:—*

(i) University Professors or Principals of post-graduate colleges and Principals of degree colleges who have held the office of the Principal of a post-graduate college for at least five years, to be appointed alternately so far as persons in the two categories are available;

(ii) University Readers in subjects in which there are no University Professors,

(iii) Principal of degree colleges; and

(iv) Heads of Post-graduate departments.

Note.—The Principal or the teacher to be appointed as Dean must profess a subject included in the Faculty concerned.

(b) *For the Faculty of Law. —*

(i) University Professors of Law or Principals of Law Colleges to be appointed alternately so far as persons in the two categories are available;

(ii) University Readers in Law in case there is no University Professor;

(iii) Heads of the Department of Law, being whole-time teachers of Law, in affiliated colleges, which are not separate Law colleges, not below the rank of Professors.

(c) *For the Faculties of Engineering and Technology, Medicine and Pharmaceutics and*

†Added by the University of Rajputana (Second Amendment) Act, 1930.

Education:—

- (i) Principals of colleges in the Faculty concerned;
- (ii) Heads of departments of subjects in the Faculty concerned.

(d) *For other Faculties:—*The qualifications and conditions of eligibility of the Deans of other Faculties shall be prescribed by the Statutes.

- (2) The Dean shall hold office for a term of three years and no person shall be eligible for re-appointment as Dean, until a period of at least six years has elapsed after the expiry of his last term.

‡24C.(1) The Dean of a Faculty shall be responsible for the due observance of the Statutes, Ordinances and Regulations relating to that Faculty.

Functions of
Deans of
Faculties.

- (2) The Dean shall preside at the meetings of the Faculty and shall record its proceedings.

- (3) The Dean shall have the right to be present and speak at the meetings of the Boards of Studies relating to his Faculty but not to vote thereat unless he is a member thereof.

‡24D. Each Faculty shall exercise the following functions, namely,—

Functions of the
Faculties.—

- (a) to recommend to the Academic Council courses of study and curricula and schemes of examinations, after consulting the Boards of Studies,
- (b) to recommend to the Syndicate through the Academic Council what Boards of Studies should be instituted and the strength of such Boards, and to constitute them as provided in section 24 E;
- (c) to recommend to the Academic Council conditions for the award of degrees and other academic distinctions;

- (d) to co-ordinate work in the subjects assigned to the Faculty;
- (e) to organise research, or to secure co-ordination therein when desirable;
- (f) to deal with any matter referred to it by the Academic Council or the Syndicate;
- (g) to remit matters to Boards of Studies;
- (h) to consider any matter within its purview referred to it by a Board of Studies;
- (i) to hold meetings with the sanction of the Vice-Chancellor jointly with any other Faculty or Faculties, such joint meetings to be convened by the Vice-Chancellor and to be presided over by him or by a Dean nominated by him; and
- (j) to discharge such other functions as may be prescribed by the Statutes.

Boards of Studies—
Number, composition
and term of
office.

- *24E (1) There shall be a Board of Studies for each subject or group of subjects. The number of the Boards of Studies in each Faculty as also the number of members of each Board shall be determined by the Syndicate on the recommendation of the Academic Council and the Faculty concerned.
- (2) The Boards of Studies shall be constituted by the Faculty concerned for a period of three years.
 - (3) In the Faculties of Arts, Science, Commerce and Law, the members of a Board shall not exceed—
 - (a) seven in the case of a Board dealing upto post-graduate studies, and
 - (b) five in other cases
 - (4) The Faculties of Engineering and Technology and of Medicine and Pharmaceutics and Education shall have one Board each. The number of members in the Board of Studies relating to the Faculty of

Education shall not exceed five and in each of the other two Boards, eleven.

- (5) A Board when dealing with a subject or subjects for High School education shall co-opt a member, who shall be Headmaster of a High School of not less than ten years' teaching experience in the subject:

Provided that in calculating the maximum number of members prescribed for a Board by sub-section (3), the number co-opted under this sub-section shall not be counted.

- (6) There shall be at least one and not more than two external members on each Board consisting of five or less than five members and at least two and not more than three external members on each Board consisting of more than five members.
- (7) In the case of a Board dealing upto post-graduate studies, there shall be at least three internal members who shall be heads of post-graduate departments, or post-graduate teachers to the extent the number of such heads is less than three in the University or in affiliated colleges or approved institutions.
- (8) Each Board shall have a convener appointed by itself in the following order of preference from among its internal members, namely:—

- (i) University Professors;
- (ii) Principals of post-graduate colleges being heads of departments or Principals of degree colleges who have held the office of the Principal of a post-graduate college and head of a department for at least five years;
- (iii) University Readers in subjects in which there is no University Professor;
- (iv) Principals of degree colleges being heads of departments;
- (v) Heads of post-graduate departments in colleges;

- (vi) Heads of degree departments in colleges;
- (vii) other heads of departments for subjects taught only upto the Intermediate standard.

Explanation.—“Internal member” means a member who is a teacher in the University, in an affiliated college, a recognised high school or an approved institution; and “external member” means one who is not an internal member.

**Board of Studies—
Functions.**

- ‡24F(1) The Boards of Studies shall recommend courses of study and curricula in their respective subjects and shall advise on all matters relating thereto referred to them by the Syndicate or the Academic Council or the Faculty concerned.
- (2) A Board of Studies may bring to the notice of the Academic Council or the Syndicate matters connected with examinations in its subject or subjects and may also address the Faculty concerned on any matters connected with the improvement of the courses therein.
- (3) Any two Boards of Studies may, with the consent of the Vice-Chancellor, and shall at the request of the Academic Council or the Syndicate, jointly meet and act in concurrence and render a joint report upon any matter which lies within the province of both. In such cases the joint meeting shall elect its own chairman from among the two Conveners. The quorum of a joint meeting of the Board must include a full quorum of each Board represented, no member present being counted on more than one separate quorum.
- (4) The Boards of Studies shall prepare panels of examiners in their respective subjects in accordance with the Statutes.

**Board of High
School Education—
Composition and
term of office.**

- ‡24G.(1) The Board of High School Education shall consist of the following, namely:—

- (i) the Vice-Chancellor;
 - (ii) the Director of Education in Rajasthan;
 - (iii) three members of the Senate elected by the Senate;
 - (iv) two members of the Syndicate elected by the Syndicate;
 - (v) the Deans of the faculties of Arts, Science and Commerce;
 - (vi) seven heads of institutions having high school classes to be nominated by the Vice-Chancellor, of whom five—three from Government institutions and two from private institutions—shall be headmasters of high schools and two—one each from Government and Private institutions—shall be Principals of Intermediate colleges;
 - (vii) one member from among the Principals of Training Colleges, affiliated to the University to be nominated in rotation by the Vice-Chancellor, one each from Government and Private institutions;
 - (viii) two women members—one each from Government and private institutions—to be nominated by the Vice-Chancellor in rotation from amongst the Heads of Women's Colleges which include High School Education or Heads of Girls' High Schools; and
 - (ix) three persons associated with any educational work or institution in Rajasthan to be nominated by the Government.
- (2) Members of the Board of High School Education, other than *ex-officio* members, shall hold office for a period of three years.

‡24H. (1) The Board of High School Education shall advise the Syndicate in all matters relating to high school education. The recommendations

Board of
High School
Education—
Functions.

of the Board shall first be considered by the Syndicate and such of them as the Syndicate might think proper shall then be referred to the proper officer or authority of the University.

- (2) Subject to approval by the Syndicate, the Board shall make rules relating to—
- (i) recognition of high schools;
 - (ii) residence of students of high schools;
 - (iii) admission of internal and external students to the High School Examination;
 - (iv) qualifications of teachers of high school (IX and X forms) classes; and
 - (v) other allied matters.

**The Board of
Inspection—
Composition.**

‡24-I. The Board of Inspection shall consist of the following namely:—

- (i) the Vice-Chancellor;
- (ii) the Director of Education in Rajasthan; and
- (iii) the Deans of Faculties.

**The Board of
Inspection—
Functions.**

- ‡24 J. (1) The Board shall deal with applications for affiliation, recognition or approval of colleges, schools and institutions within the territorial jurisdiction of the University, arrange for their inspection in the manner prescribed by the Statutes, and make recommendations to the Syndicate in regard to their affiliation, recognition or approval, as the case may be.
- (2) The Board shall appoint three committees consisting of five members each, one to deal with applications for affiliation of colleges, another to deal with applications for recognition of schools and the third to deal with applications for approval of institutions. The committees shall be appointed for a period of three years.
- (3) Subject to approval by the Syndicate, the Board may make rules for the approval, recognition and affiliation of institutions,

schools and colleges, provided that such rules relating to high schools shall not be made until the Board of High School Education has first been consulted.

†24K (1) The University shall establish a Research Board, a Publication Board, a Board of Sports, a Health and Residence Board and such other Boards as may be prescribed by the Statutes. Other Boards.

(2) The powers and functions of the Boards established under sub-section (1) shall be as prescribed by the Ordinances.

†24L. Subject to the general powers of inspection, supervision and calling of periodical returns, to be exercised by the University in accordance with the Statutes, approved institutions shall enjoy full autonomy in the matter of prescribing their courses of study and curricula, organisation of their work and in all other academic and administrative matters. Autonomy of Approved Institutions.

†24M. While granting recognition, the Syndicate shall specify the status of an approved institution as a post-graduate, degree or intermediate college or a high school, as the case may be, and members of the staff of such institution shall then enjoy the same rights and privileges as are allowed under this Act and the Statutes, Ordinances, Regulations and Rules made thereunder, to members of the staff of a college or school of equal status in the University in respect of membership of an authority or body of the University or for appointment as an officer of or an examiner in the University. Privileges of Approved Institutions.

†24N. The Syndicate shall have power to recognise any degree, diploma or certificate granted by an approved institution as equivalent to a corresponding degree, diploma or certificate of the University. The University shall, for this purpose, prescribe by Statutes the conditions and the manner according to which an approved institution shall hold its examinations. Recognition of examinations conducted by Approved Institutions.

*25. Omitted.

*26. Omitted.

Statutes—
Scope.

§27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

- (1) conferment of honorary degrees,
- (2) holding of convocation to confer degrees;
- (3) powers and functions of the officers of the University and their mode of appointment, save as provided in this Act;
- (4) constitution, powers and functions of the Authorities, Boards and Committees of the University, save as provided in this Act;
- (5) institution and maintenance by the University of departments, colleges, institutes of research or specialised studies and hostels;
- (6) fees to be charged for courses of study and curricula prescribed by the University and for admission to its examinations, degrees and diplomas;
- (7) inspection and recognition, affiliation or approval of high schools and hostels, colleges and institutions;
- (8) conditions governing the appointment, duties and remuneration of examiners;
- (9) acceptance and management of bequests, donations and endowments,
- (10) registration of graduates and maintenance of the register of registered graduates;
- (11) procedure at meetings of the Senate and transaction of its business;

*Omitted by the University of Rajputana (Second Amendment) Act 1950

†As amended under the University of Rajputana (Second Amendment) Act, 1950.

- (12) constitution of pension, insurance, gratuity and provident fund for the benefit of officers, teachers, clerical and inferior staff of the University;
- (13) terms and vacation of the University;
- (14) degrees, diplomas and other academic distinctions to be awarded by the University; and
- (15) all matters which by this Act are to be or may be prescribed by Statutes, or which are dealt with in the Statutes set out in the Schedule to this Act.

28 (1) On the commencement of the Act, the Statutes of the University shall be those set out in the Schedule.

Statutes —
how made

(2) The Statutes may be amended, repealed or added to by Statutes made by the Senate in the manner hereinafter appearing.

(3) The Syndicate may propose to the Senate the draft of any Statute to be passed by the Senate. Such draft shall be considered by the Senate at its next meeting. The Senate may pass the Statute, or a part of it, in the form in which it has been proposed, or may reject the Statute or part of it, or may return the Statute to the Syndicate for reconsideration, either in whole or in part, together with any amendments which the Senate may suggest.

(4) Where any Statute or part of a Statute has been returned to the Syndicate for reconsideration, the Syndicate will formulate its opinion, which will be placed before the Senate at its next meeting.

(5) Where any Statute has been passed or a draft of a Statute or part thereof has been rejected by the Senate, it shall be submitted to the Chancellor, who may refer the Statute or draft back to the Senate for further consideration or, in the case of a Statute passed by the Senate, assent thereto or withhold his assent. A Statute passed by the Senate shall have no validity until it has been assented to by the Chancellor.

(6) The Syndicate shall not propose the draft of any Statute affecting the status, powers or constitution

of any authority of the University until such authority has been given an opportunity of expressing an opinion upon the proposal. Any opinion so expressed shall be in writing and shall be considered by the Senate, and shall be submitted to the Chancellor along with the Senate's decision in respect of the draft Statute.

- (7) Any member of the Senate may propose to the Senate the draft of any Statute and the Senate may refer such draft for consideration to the Syndicate, which may either reject the proposal or submit the draft to the Senate in such form as the Syndicate may approve, and the provision of this section shall apply in the case of any draft so submitted as they apply in the case of a draft proposed to the Senate by the Syndicate.

**Ordinances—
Scope.**

*29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

- (1) courses of study and curricula to be laid down for all degrees and diplomas of the University;
- (2) conditions under which students shall be admitted to courses of study and curricula and examinations for degrees, diplomas and other academic distinctions;
- (3) conditions of residence, conduct and discipline of students of the University;
- (4) conduct of examinations;
- (5) recognition of supervisors for guiding research;
- (6) emoluments and conditions of service of University teachers;
- (7) mode of execution of contracts for, or on behalf of, the University,

*As amended under the University of Rajputana (Second Amendment) Act, 1950.

- (8) rules to be observed and enforced by affiliated colleges and recognised high schools in respect of transfer of students;
- (9) all matters which by this Act or the Statutes are to be or may be provided for by Ordinances; and
- (10) generally all matters for which provision is, in the opinion of the Syndicate, necessary for the exercise of the powers conferred or the performance of the duties imposed upon the Syndicate by this Act or the Statutes.

30. (1) Save as otherwise provided in this section Ordinances shall be made by the Syndicate, provided that no Ordinance concerning admission to the University or to its examinations, courses of study, schemes of examination, attendance, and appointment of examiners shall be considered unless a draft of such Ordinance has been proposed by the Academic Council.
- (2) The Syndicate shall not have power to amend any draft proposed by the Academic Council under the provisions of sub-section (1), but may reject it or return it to the Academic Council for reconsideration either in whole or in part, together with any amendments which the Syndicate may suggest.
- (3) All Ordinances made by the Syndicate shall be submitted to the Senate, and shall be considered by the Senate at its next meeting. The Senate shall have power, by a resolution passed by a majority of not less than two-thirds of the members voting, to cancel any Ordinance made by the Syndicate and such Ordinance shall from the date of such resolution be void.

Ordinances—
how made

*31. The Academic Council may, subject to the approval of the Syndicate, make regulations, consistent with this Act, the Statutes and the Ordinances, providing for all matters which by this Act, the Statutes or the Ordinances are to be provided for by regulations and for all other matters solely lying within its purview.

Regulations.

Rules

†31A. Any authority of the University specified in clauses (iv), (v), (vi), (vii) and (viii) of section 17, and any other board of the University may, subject to the approval of the Syndicate, make rules, consistent with this Act and the statutes, Ordinances and Regulations, providing for all matters solely concerning the conduct of its own business.

Affiliated Colleges.

32. The affiliated colleges shall be such as may, after the commencement of this Act, be recognised by the Syndicate in accordance with this Act and the Statutes, but shall include all colleges recognised at the commencement of this Act as Colleges of the University so long as such recognition continues.

Admission to affiliated Colleges.

33. The affiliated colleges will be open, on equal terms, to students from all States represented on the Senate.

Committee for the selection of examiners.

‡34. (1) Examiners shall be appointed by the Syndicate on the recommendation of the Committee for the selection of examiners.

(2) If any examiner is unable to act for any cause and fresh appointment can not be made in time in the manner prescribed by sub-section (1), the Vice-Chancellor shall have power to appoint another examiner to fill the vacancy and shall communicate such appointment to the Syndicate.

(3) The Syndicate shall not make any change in the recommendations made by the Committee with regard to the appointment of examiners except after recording specific reasons for any such change.

(4) The Committee for the selection of examiners in each subject or a group of allied subjects shall consist of:—

- (i) the Vice-Chancellor;
- (ii) the Dean of the Faculty concerned;
- (iii) the Convener of the Board of Studies concerned; and

†Added by the University of Rajputana (Second Amendment) Act, 1950.

‡As amended under the University of Rajputana (Second Amendment) Act, 1950.

- (iv) one member other than a convener of the Board of Studies concerned to be elected by the Board every year.

†34A. (1) There shall be a Standing Committee for the conferment of Honorary Degrees consisting of the following namely:—

Committee for the conferment of honorary degrees.

- (i) the Vice-Chancellor;
- (ii) the Chief Justice of the High Court of Rajasthan; and
- (iii) the Dean of the Faculty concerned.

(2) No honorary degree, diploma or other academic distinction shall be conferred on any person unless the proposal for the conferment thereof has been—

- (a) originally made by the said committee;
- (b) approved of by the Syndicate;
- (c) passed by the Senate; and
- (d) confirmed by the Chancellor;

Provided that, in cases of emergency, such proposal may be confirmed by the Chancellor on the recommendation of the said Committee, if the recommendation has been approved by the Syndicate.

†34B. There shall be a Results Committee for declaration and publication of the results of University examinations. The Committee shall consist of the following, namely:—

Results Committee.

- (i) the Vice-Chancellor;
- (ii) the Director of Education in Rajasthan;
- (iii) the Registrar,
- (iv) the Dean of the Faculty concerned; and
- (v) one member nominated by the Vice-Chancellor every year.

35. Subject to the provisions of this Act, the funds of the University shall be provided and administered in the manner prescribed in the Statutes.

Finance.

Removal of
names of
registered
graduates.

36. The Syndicate shall, with the concurrence of not less than two-thirds of the members of the Senate, have power to remove the name of any person from the register of registered graduates.

Filling of casual
Vacancies.

37. (1) All casual vacancies among the members (other than *ex-officio* members) of any authority or other body of the University shall be filled, as soon as conveniently may be, by the person or body who appointed, elected or co-opted the member whose place has become vacant, and the person appointed, elected or co-opted to a casual vacancy shall be a member of such authority or body for the residue of that member's term of membership.

(2) No act or proceeding of any authority, board or committee of the University shall be invalidated by any vacancy in that body.

Provident Fund.

38. The University shall constitute a Provident Fund for the benefit of its officers, teachers, clerical staff and servants in such manner and subject to such conditions as may be prescribed by the Statutes.

Restrictions on
period of office of
certain members
of University
Authorities.

§39. Notwithstanding anything contained in this Act or the Statutes thereunder, a person nominated or elected to be a member of any of the University Authorities specified in section 17 in his capacity as the member of a particular body or as the holder of a particular appointment shall hold office so long only within the period of office prescribed by this Act or the Statutes thereunder for the members of such Authority as he continues to be the member of that body or the holder of that department, as the case may be.

Registrar not to
accept any remuneration
for any work.

*40. The Registrar shall not be offered nor shall he accept any remuneration for any work in the University;

Provided that nothing in this section shall in any way affect his emoluments and conditions of service determined under sub-section (2) of section 14.

§As amended under the University of Rajputana (Amendment) Act, 1951.

*Added by the University of Rajputana (Amendment) Act, 1950.

§41. No. member of the Syndicate shall get any remuneration for any work done by him for the University, whether as an examiner or as a tabulator. If, however, a member of the Syndicate is specially invited to become an examiner, the maximum amount of remuneration payable to him shall not exceed one hundred rupees.

Members of the Syndicate not to get remuneration.

§42. No book written or published by any person who is the member of a Board of Studies of the University shall be prescribed or recommended for any examination of the University so long as such person remains a member of the Board.

Books written by a member of the Board of Studies not to be prescribed.

§43. No book prescribed or recommended for any examination of the University shall ordinarily be changed before a period of five years.

Books prescribed or recommended not to be changed.

§44. Where any provision of this Act or of the Statutes, Ordinances, Regulations or Rules refers to any officer of the Government by designation, then, if that designation is altered or that office ceases to exist, the reference shall be construed as a reference to the altered designation, or, as the case may be, to such corresponding officer as the Government may direct.

Reference to Government officers to be construed in case of change of designation, as reference to corresponding officers.

§45. If any difficulty arises as to the first constitution or re-constitution of any Authority of the University after coming into force of this Act or otherwise in first giving effect to the provisions thereof, the Government, as occasion may require, may in consultation with the Vice-Chancellor, by order, do anything which appears to it necessary for the purpose of removing the difficulty.

Removal of difficulties at the commencement of the Act.

§46. The provisions of the General Clauses Act, 1897, of the Central Legislature, shall *mutatis mutandis* apply, so far as may be, to this Act and to the Statutes, Ordinances, Regulations and Rules thereunder in the same manner as they apply to a Central Act.

Interpretation.

§ As amended under University of Rajputana (Amendment) Act, 1951

§ Added by the University of Rajputana (Second Amendment) Act, 1950.

THE SCHEDULE

THE STATUTES OF THE UNIVERSITY.

Definition.

1. In these Statutes, unless there is anything repugnant in the subject or context:—

(a) "the Act" means the University of Rajputana Act, 1946.

(b) "Officers", "Authorities", "Professors", "Readers", "Clerical Staff" and "Servants", mean, respectively, officers, authorities, Professors, Readers, Clerical staff and servants of the University.

‡2. Omitted.

‡3. Omitted.

‡4. ~~5.~~ Omitted.

‡5. Omitted.

‡6. Omitted.

Meetings of the Syndicate.

7. Meetings of the Syndicate shall be held ordinarily at least once in every two months, and at other times when convened by the Vice-Chancellor. One-third of the members shall constitute a quorum.

‡8. ~~9.~~ Omitted.

‡9. Omitted.

Meetings of the Academic Council.

*10. Meeting of the Academic Council shall be held once a year, and otherwise when convened by the Vice-Chancellor. Fifteen shall constitute a quorum.

‡11. Omitted.

‡12. Omitted.

Meetings of the Faculties.

13. Meetings of the Faculties shall be held when convened by the Dean or by the Registrar on his behalf. Half the members shall constitute a quorum.

‡ Omitted by the University of Rajputana (Second Amendment) Act, 1950.

* As amended under the University of Rajputana (Second Amendment) Act, 1950.

*14. Omitted.

15. The Senate may, on the recommendation of the Syndicate, by a resolution passed with the concurrence of not less than two-thirds of the members voting, withdraw any degree or diploma conferred by the University.

Withdrawal of
degrees and
diplomas.

*16. (1) Omitted.

Honorary degrees.

- (2) Any honorary degree conferred by the University may, with the previous approval of two-thirds of the members present at any meeting of the Senate and the sanction of the Chancellor, be withdrawn by the Syndicate.

†17. The following persons shall, on payment of such fees as may be prescribed by the Statutes, be entitled to have their names enrolled in the register of Registered Graduates:—

Registered
Graduates.

- (1) Graduates of the University of Rajputana of three years' standing and upwards (counted from the date of passing), that have taken their degree at a Convocation or in absentia.
- (2) For a period of five years from the commencement of the Act all graduates of three years' standing or upwards of any Indian University incorporated by any law for the time being in force or of any other University which may be approved for this purpose by the Syndicate, provided—
 - (i) they belong to any State of Rajputana, which has accepted the University Act, by birth or domicile, as defined by that State, or
 - (ii) they are inspectors of schools or members of the staff in an affiliated college or recognised high school in such a State.

Note:—The time limit imposed by this clause relates to applications for enrolment and not to continuance as registered graduates of those enrolled

*Omitted by the University of Rajputana (Second Amendment) Act, 1950.

†As amended by the Senate on April 30, 1948

- †18. (1) Applications for enrolment in the register of Registered Graduates shall be made by the applicant himself to the Registrar in the form provided for the purpose.

N. B.—The words "made by the applicant himself" mean that the application for registration is to be signed by the applicant himself and not by any one else on his behalf. The applications may of course be sent to the University either in person, through a messenger or by post.

- (2) Each applicant shall send with his application a fee of Rs. 10/- for registration.
- (3) On receipt of the application the Registrar, if he finds that the applicant is duly qualified, shall cause the name of the applicant to be entered in the Register.
- (4) No graduate shall be enrolled during a period of two months immediately preceding an election of registered graduates to the Senate.
- (5) Every Registered Graduate shall inform the Registrar in writing of all changes in his permanent address.

University teachers.

19. Such University Professorships and University Readerships and other University teaching posts shall be instituted as may be determined by the Syndicate on the recommendation of the Academic Council. The duties, emoluments and conditions of service of University Teachers shall be prescribed in the Ordinances.

Committee of selection.

20. (1) No person shall be appointed as a University Teacher except on the recommendation of a Committee of Selection constituted for the purpose.
- (2) The Committee of Selection shall consist of the following members:—
 - (i) the Vice-Chancellor, Chairman;
 - (ii) the Dean of the Faculty concerned;
 - (iii) one member of the Syndicate selected by the Syndicate;

- (ii) two persons possessing special knowledge of the subject concerned, appointed by the Chancellor on the recommendation of the Syndicate.
- (3) The Committee of Selection shall report to the Syndicate. If the Syndicate accepts the recommendation, it will make the appointment. If it disagrees, it will refer the matter back to the Committee of Selection with a request for a fresh recommendation.
21. The University Fund will be administered by the Syndicate. It will be composed of contributions from the States and other income of the University. University Fund.
- 22 (1) The Annual Report, and the annual accounts and balance sheet, are to be prepared by the Registrar, under the direction of the Syndicate, and submitted to the Senate one month before its annual meeting. Annual Report and Accounts.
- (2) There shall be a detailed running audit by a registered accountant.*
- (3) The budget estimates for the forthcoming year are to be prepared by the Registrar, under the direction of the Syndicate, and submitted to the Senate one month before its annual meeting.
23. (1) The Syndicate shall appoint a Finance Committee to advise it on matters of finance. Finance Committee
- (2) The Finance Committee shall be composed of the Vice-Chancellor as Chairman, six members of the Syndicate and a financial expert.
- (3) The functions of the Finance Committee shall be as follows:—
- (i) to examine the annual budget estimates and advise the Syndicate thereon;
 - (ii) to review the accounts of the University, and the audit objections and the replies thereto;
 - (iii) to make recommendations to the Syndicate on all matters relating to the finances of the University.

- (4) No reappropriation exceeding Rs. 250/- of allotments in the annual budget shall be made except by the Syndicate in consultation with the Finance Committee.

Health and
Residence Board.

24. The University shall include a Health and Residence Board, whose constitution and functions shall be prescribed in the Ordinances.

Selection of
Examiners.

‡25. (1) No person shall be qualified for appointment as an examiner in a subject for any examination unless he—

- (a) has taught the subject for at least three years upto the standard of the examination and possesses five years' teaching experience in that subject; or
- (b) has had five years' experience, as an examiner in the subject, of the standard of the examination concerned.

• *Explanation.*—Teaching or examining experience in any Indian University established by law shall be counted for the purpose of this sub-statute.

(2) (a) Each Board of Studies shall prepare a panel consisting of:—

- (i) all qualified internal examiners, and
- (ii) as many external examiners, as may be needed for conducting examinations of the University for a period of five years, in each subject for each examination upto and inclusive of the examination for the Master's degree. The Committee for the selection of Examiners shall select examiners in rotation from out of the panel and no examiner outside the panel shall be appointed unless and until a person within the panel is not available or cannot be appointed in accordance with the provisions hereinafter contained.

(b) The panels shall ordinarily be revised once in five years and such of the persons in the previous panels as have not got a chance of acting as examiners during the last 'quinquennium' shall be given preference over others in the revised panels.

(c) This sub-statute shall not apply to examiners for a Doctor's degree.

(3) Excepting for examinations in the Faculty of Medicine and Pharmaceutics and of Engineering and Technology:—

(a) no person shall be appointed examiner for any examination upto and inclusive of the Intermediate examination for more than two years consecutively; and for the degree and post-graduate examinations for more than three years consecutively; and

(b) before a person, who has been appointed as an examiner for one year or if continued under clause (a) for two or three years consecutively is again appointed as an examiner, there shall be a gap of at least four years in the case of examinations upto and inclusive of an examination for the Bachelor's degree, and of at least two years in the case of an examination for the Master's degree;

Provided that of the persons, who have acted in any one year as co-examiners, only one-half shall be replaced for the next year.

(4) Excepting as aforesaid no person shall be examiner in more than one paper in any one year in the University.

Explanation—"Paper" includes a "Practical"

Exception—An examiner in an examination for the M.Sc. degree may be appointed for one paper and one practical alongside.

(5) Not more than one person from the same college, school or institution shall be appointed as an examiner in a particular subject for a particular examination;

Provided that this condition may be relaxed, where necessary in the case of post-graduate examinations.

(6) No person who is himself appearing in any written examination of the University shall be appointed as an examiner for any examination of the University in the year in which he is so appearing. When any person is appointed as an examiner in any year, he shall forthwith inform the Registrar whether he intends so to appear.

(7) No person shall be appointed as a paper setter in any subject for an examination at which any of his near relations intends to appear in that year. Every paper setter shall, as soon as may be, after his appointment has been made, communicate to the Registrar, if any such relation intends so to appear.

(8) The maximum number of answer-books allotted to any examiner in the University in any one year shall not exceed three hundred.

(9) Except in the case of the High School and Intermediate Examinations —

- (a) there shall be at least one external examiner in an examination for a subject having more than one paper;
- (b) in the case of Law examinations, there shall be external examiners in the proportion of about one third of the total number of examiners; and
- (c) in the case of examinations for the Doctor's degree, there shall be external examiners in the proportion of about two-thirds of the total number of examiners.

(10) For the M.Sc Examination, in subjects other than Mathematics, the head of a post-graduate department in an affiliated college shall be one of the examiners for the students of that college appearing at the examination. The provisions of this sub-statute shall be given effect to notwithstanding anything herein contained.

(11) The Syndicate may, on the recommendation of the Committee for the selection of examiners, after recording its reasons in writing, waive the provisions of sub-statutes (3) to (10) in exceptional cases

- *Explanation*—In these statutes, “examiner” includes “co-examiner” except in so far as there is anything repugnant in the subject or context.

26. (1) Every affiliated college shall be a public educational Institution.

Affiliated
Manager

(2) The whole of the funds of an affiliated college shall be applied to its own educational purposes, and in the case of a college not maintained by a Government shall be fully controlled by a regularly constituted governing body, which shall include the Principal and at least one other member of the teaching staff. The rules relating to the constitution of the governing body shall be such as will ensure the proper management of the college.

(3) Any change in the constitution of the governing body shall be reported forthwith to the Syndicate.

(4) The Principal of a college shall be responsible for the internal administration of the college.

(5) Every college shall have a duly constituted College Council properly representative of the teaching staff, to advise the Principal in the administration of the college.

(6) Every college not maintained by a Government shall satisfy the Syndicate that adequate financial provision is available for its efficient maintenance, either in the form of an endowment or by an undertaking given by the person or body maintaining it; and that the college is established on a permanent basis.

(7) Every college shall maintain such registers and records as may be prescribed by the Ordinances and furnish such statistical and other information as the University may from time to time specify.

(8) Every college shall submit each year by a date to be fixed by the Syndicate a report on the working

of the college during the previous year, giving the particulars and the circumstances of any change in the staff or the management, the number of students, and a statement of income and expenditure and such other information as may be required.

Instruction.

27. Every college shall provide instruction in such subjects and in preparation for such examinations as may be authorised in respect of that college, from time to time, by the Syndicate.

Educational efficiency.

28. Every college shall satisfy the University that it maintains a satisfactory standard of educational efficiency for the purposes for which recognition is enjoyed or sought, in respect of instruction, internal examinations and promotion, and tutorial guidance of students, and all other matters.

Organization and management.

29. Every college shall satisfy the University that it is in all respects suitably organised and conducted.

Teaching Staff.

30. (1) Every college shall satisfy the University that the number and qualifications of its teaching staff in each subject are adequate, and in accordance with the rules prescribed by the University, and that their emoluments and the conditions of their service are such as may be approved by the University.

(2) Every college shall maintain a proportion of teachers to students which is not smaller than a minimum to be prescribed by Ordinance and which is sufficient for thorough tutorial supervision.

(3) The staff of a college for women shall, as far as possible, be composed of women.

(4) Every teacher in a college not maintained by a Government shall be employed under a written contract stating the conditions of his service and the salary to be paid to him; and a copy of his contract shall be given to the teacher and a copy shall be lodged with the University.

(5) Any difference or dispute of any kind whatsoever arising out of a contract between an affiliated college not maintained by a Government and a member of its teaching staff including the Principal shall be referred to arbitration and determined on the lines of the provisions

of the Indian Arbitration Act, 1940. Such arbitration shall be held by two persons not associated with the college concerned, one to be chosen by each party in difference; and in case of their non-agreement, the Vice-Chancellor or his nominee shall act as the Umpire. The decision of the arbitrators or of the Umpire, as the case may be, shall be final. An award given in favour of the teacher in such an arbitration shall be a condition precedent to any right of action against the college in respect of such difference or dispute:

Provided that this clause shall not apply in the case of a dispute arising in connection with the termination of the services of either the Principal or any member of the teaching staff of an affiliated college who is on probation or on a temporary basis.

(6) Every college not maintained by a Government shall maintain a Provident Fund for the benefit of members of its teaching staff, with rules approved by the University.

(7) A teacher dismissed for misconduct by an affiliated college shall not be employed by any other affiliated college without the previous consent in writing of the Vice-Chancellor.

31. Admission of students to a college shall be subject to the conditions prescribed by the Ordinances in this behalf.

Admission of students.

32. Every college shall conform to the University terms and vacations.

Terms and vacations.

33. In every college the fees charged shall be such as may be approved by the University.

College fees.

34. Every college shall satisfy the University that its buildings, furniture, laboratory and library equipment and all other equipments are satisfactory.

Accommodation and equipment.

35. Every college shall satisfy the University as to the adequacy of its library, and the suitability of the system of cataloguing and lending of books.

Library

36. (1) Every college shall satisfy the University that proper discipline is maintained in the college and the hostels.

Discipline, Health and Residence.

(2) Every college shall make adequate provision for the residence of its students not residing with their parents or recognised guardians, and shall provide adequate facilities for the physical exercise and health of its students; and shall employ an efficient system of medical examination and care. Residence in colleges or their hostels shall be governed by rules approved by the University.

(3) Every college and its hostels shall be subject to inspection, in regard to health and residence, on behalf of the Health and Residence Board or of the Syndicate.

(4) Every college to which women students as well as men are admitted shall provide a separate retiring room and other necessary conveniences for women students.

Inspection and Recognition

37. (1) A college applying for recognition, whether for the first time or in additional subjects or for additional courses of study, shall make written application to the Registrar not later than the 15th October, preceding the academic year from which the recognition sought is to take effect. With the application shall be given such information as is desired by the University.

(2) An application for recognition may be withdrawn at any time before recognition is granted.

(3) Recognition shall in no case be granted with retrospective effect.

(4) The Syndicate shall provide for the periodical inspection of each college, and may cause an inspection to be made at any time.

(5) The Syndicate shall have power to cause an enquiry to be made in respect of any matter connected with a college. In every case notice shall be given to the management of the college of the intention to cause an enquiry to be made and the management shall be entitled to be represented thereat.

(6) The Syndicate may as the result of inspection or enquiry made under the foregoing clauses (4) and (5) advise the college concerned

on any matter, or direct the college to take such action as may be specified, and the college shall take such action as directed within such period as may be fixed.

- (7) The Syndicate shall have power, at any time after due enquiry, to withdraw the recognition granted to a college which is not conducted in accordance with the conditions prescribed by the Statutes and Ordinances or imposed by the Syndicate at the date of recognition or at any later date. The Syndicate shall give the college an opportunity of appearing at any such enquiry and of making representations on its own behalf, and shall record its opinion on any representation so made.
- (8) The Syndicate shall have power after inspection, to withdraw recognition in respect of any subject or course of study.

‡37A. (1) For the inspection of High Schools, Colleges and Institutions, the Board of Inspection shall appoint Inspectors from a panel which shall be constituted by the Board and ordinarily revised once in five years. The panel shall consist of the following namely:—

Inspectors.

(a) *For High Schools:—*

- (i) Principals of degree colleges, including post-graduate colleges;
- (ii) Principals of Intermediate Colleges of not less than 5 years' standing;
- (iii) Inspecting officers of the Education Department of the Government not below the rank of Divisional Inspector.

(b) *For Intermediate and Degree Colleges, other than postgraduate colleges:—*

- (i) University Professors and Readers;
- (ii) Principals of degree and post-graduate colleges.

(c) *For Post-Graduate Colleges:—*

- (i) Professors of the University or of any recognised Indian University.

- (u) Principals of post-graduate colleges affiliated to the University or to any recognised Indian University.
- (d) *For Institutions*:—The panels for High Schools and Colleges shall also apply to institutions of equal status.
- (2) The number of Inspectors to be sent out by the Board of Inspection shall be limited as follows:—
 - (a) *High Schools*:—
 - (i) *For new recognition*—Two persons, one of whom shall be the Inspector of the Division concerned, provided that, for Government schools another person shall be appointed in place of the Inspector;
 - (ii) *For recognition in additional subjects*—One person only.
 - (b) *Intermediate and degree colleges*:—
 - (i) *For new affiliation*—One person for each Faculty but not less than two in any case;
 - (ii) *For affiliation in additional subjects*—One person for each Faculty.
 - (c) *For affiliation in post-graduate subjects*:—One for each subject.
 - (d) *For approval of Institutions*:—Two persons or in case of Research institutions two persons for each subject.
 - (e) *For periodical Inspection*:—One person for high schools, two persons for Intermediate and degree colleges, and colleges doing post-graduate work in one Faculty only, three persons for colleges doing post-graduate work in more than one Faculty and two persons for approved institutions.

*37B. (1) The Syndicate shall have power to declare an institution (other than a college or school), engaged either in research or in other educational and teaching work as an approved institution by the University.

* Added by the University of Rajputana (Second Amendment) Act, 1950.

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- (2) An institution applying for approval under this Statute shall send a letter of application to the Registrar and shall give full information therein in respect of the following matters, namely:—
- (a) status for which it wants to apply;
 - (b) constitution and personnel of the managing body;
 - (c) subjects and courses, in case such courses are different from those prescribed by the University, in regard to which approval is sought;
 - (d) accommodation, equipment and the number of students for whom provision has been or is proposed to be made;
 - (e) strength of the staff, their qualifications and salaries and the research or other educational work done by them; and
 - (f) fees levied or proposed to be levied and the financial provision made for capital expenditure on buildings and equipment and for the continued maintenance and efficient working of the institution.
- (3) Before taking the application into consideration the Syndicate may call for any further information which it may deem necessary.
- (4) If the Syndicate decides to take the application into consideration, it may direct a local inquiry to be made by competent persons authorised by it in this behalf. After considering the report made as a result of such local inquiry and making such further inquiry as may appear to it to be necessary, the Syndicate shall grant or refuse the application or any part thereof.
- (5) When the application or any part thereof is granted, the Syndicate shall define the status of the institution, specify in case of research institutions, the subject or subjects and in case of others, the courses of teaching in respect of which the institution is approved, communicate the fact to the Academic Council and make

a report thereof to the Senate at its next succeeding meeting.

(6) (a) The rights conferred on an institution by approval may be withdrawn or suspended for any period if it has failed to observe any of the conditions of approval or is conducted in a manner which is prejudicial to the interests of Education or is in contravention of such provisions of this Act, the Statutes, Ordinances or Regulations as are applicable to it as an approved institution.

(b) A motion for such withdrawal or suspension shall be initiated only in the Syndicate.

—The member of the Syndicate who intends to move such a motion shall give notice of it and shall state in writing the grounds on which it is made.

(c) Before taking the said motion into consideration, the Syndicate shall send a copy of the notice and written statement mentioned in clause (b) to the head of the institution concerned together with an intimation that any representation in writing submitted within a period specified in the intimation on behalf of the institution will be considered by the Syndicate:

Provided that the period so specified may, if necessary, be extended by the Syndicate.

(d) On receipt of the representation or on the expiry of the period referred to in clause (c), the Syndicate, after considering the notice of motion, statement and representation, and after such inspection if any, by any competent person or persons authorised by the Syndicate in this behalf, and such further inquiry, if any, as may appear to it to be necessary, shall decide whether the approval should be withdrawn or suspended, as the case may be;

Provided that the approval shall not be withdrawn or suspended unless a resolution of the Syndicate to that effect is supported by a majority of at least two-thirds of the members present at the meeting, such majority comprising not less than one-half of the members of the Syndicate.

*37 C. The total number of working days in an academic year, exclusive of examination days, shall not be less than—

Minimum number of working days.

(a) 180, in the case of degree colleges or post-graduate colleges; and

(b) 210, in the case of Intermediate Colleges and High Schools."

38. The University may confer Intermediate and High School Certificates.

Intermediate and High School Certificates.

39. The University may confer the following degrees—

Degrees.

B. A., Pass and Honours.

B. Sc., Pass and Honours.

B. Com.

B. E.

B. Sc. (Ag)

B. Ed.

M. Ed.

M. B., B. S.

B. Pharm.

B. O. L.

LL. B.

M. A.

M. Sc.

M. Com.

M. O. L.

LL. M.

Ph. D.

‡D. Litt.

‡D. Sc.

LL. D.

Honoris Causa

D. Litt.

D. Sc.

LL. D.

Diplomas.

40. The University may confer diplomas to be provided for by Statutes.

Provident Fund.

41. (1) There shall be a Provident Fund for the benefit of the permanent officers, teachers, clerical staff and servants employed by the University.

(2) The management of the Provident Fund shall vest in the Syndicate, which may, from time to time, make Regulations or issue such general or special directions as may be consistent with the Statutes as to (a) the conduct of the business of the Fund and (b) any matter relating to the Fund, or its management or the privileges of the depositors not herein expressly provided for, or vary or cancel any Regulations made or directions given.

(3) (i) Every servant of the University holding a permanent substantive appointment, or appointed for a fixed period of not less than three years, and receiving a salary of thirty rupees per mensem or more shall be entitled and required to subscribe to the Provident Fund. Part-time or officiating employees shall not be so entitled.

(ii) Persons appointed on probation to substantive appointments will be entitled to subscribe to the Provident Fund, but if their services terminate before their confirmation they shall not be entitled to receive any portion of the University contribution or the interest accruing thereon

- (m) No employee of the University shall be entitled to the benefits of the Provident Fund whose services in the University entitled him to a pension or on whose account the University contributes to his pension or who has been appointed by the University on a consolidated salary or on special terms.

(4) Every employee of the University entitled to the benefits of the Provident Fund shall be required to sign a written declaration in the prescribed form that he has read this Statute and agrees to abide by it, and shall hand in for registration in the University Office the names of the person or persons to whom he wishes the balance at his credit to be paid in the event of his death.

The subscriber may, from time to time, add or change his nominee by written application to the Syndicate.

A register of such nominees shall be kept in the University Office.

*(5) The rate of subscription shall be 8 per cent of the monthly salary and the amount calculated on this basis shall be deducted from the monthly salary of each employee.

Note.—No subscription or contribution shall be made to the Provident Fund by or for the benefit of an employee who is on leave without salary.

*(6) The University shall in the case of each subscriber make a monthly contribution at the rate of 10 per cent of his salary; in the case of employees who draw a salary of more than Rs. 500/- P. M. the University contribution shall be at the rate of 8 per cent.

*(7) (i) The amount of subscription deducted from the monthly salary of each employee together with the contribution by the University shall be deposited in the Post Office Savings Bank, to the credit of an account opened in the name of each subscriber, within two days of the receipt of money so far as possible.

The investment of the amount to the credit of subscriber shall also be permissible in Government Securities or Postal Cash Certificates of National Savings Certificates through the Post Office on the conditions that—

1. in the case of Government Securities no security of the face value of less than Rs. 100/- shall be purchased at one time;
2. the Securities shall be kept in the custody of the Accountant General, Posts & Telegraphs, and the receipts thereof in the custody of the Registrar; and
3. the Postal Cash Certificates and the National Savings Certificates shall be kept in the custody of the Registrar.

* (7) (ii) Subscribers to the Provident Fund on whose behalf accounts are opened at the post office under the provisions of these Statutes will not be deprived of their right to open ordinary private accounts in the post office savings bank or to purchase post office cash certificates or National Savings Certificates or Government Securities, through the post office.

* (7) (iii) The subscription paid by a subscriber and the contribution paid by the University shall be entered monthly in a separate account for each subscriber.

* (7) (iv) A statement of the total amount at the credit of each subscriber shall be furnished to him once in the beginning of each year.

(8) A subscriber at the termination of his service shall be entitled to receive the amount which accumulates to his credit.

(9) On a subscriber's death, the amount at his credit shall be paid to the person or persons duly nominated by him, or, when no such nomination is made, to his legal heir or heirs

(10) The amount at the credit of a subscriber shall not be subject to any deduction even to cover loss or damage sustained by the University through the subscriber's misconduct or negligence:

* (11) (i) No final withdrawal shall be allowed until the termination of the subscriber's service or his death. But in case of necessity, of which the Syndicate shall be the sole judge, the Syndicate may allow a subscriber to make temporary withdrawal of a sum not exceeding the total amount subscribed by him.

* (11) (ii) Recoveries towards the amount advanced shall be made in monthly instalments not exceeding thirty as may be decided by the Syndicate, commencing at the first payment of a full month's salary after the advance is granted, but no recovery shall be made from a subscriber when he is on leave otherwise than on full salary.

(11) (iii) When a subscriber has already taken an advance, he shall not be eligible for a fresh advance until the amount already advanced has been fully paid up.

Note—In this Statute, "subscription" means the amount paid by the subscriber, and "contribution" the amount contributed by the University.

*41-A. Servants employed by the University drawing a salary of less than Rs 30/8 per month shall be entitled to a gratuity on the following scales:—

For 30 years' service
and over.

18 months' pay.

For service over 25 years but less than 30 years.	15 months' pay.
For service over 20 years but less than 25 years.	12 months' pay.
For service over 15 years but less than 20 years.	10 months' pay.
For service over 10 years but less than 15 years.	8 months' pay.
For service over 5 years but less than 10 years.	6 months' pay.
For service of less than 5 years.	Nil.

No person shall, however, be entitled to a gratuity if he is dismissed from service on account of misconduct or for some offence. If a servant dies or becomes insane while in service of the University, the gratuity shall be paid to his dependents, who in the view of the University are best entitled, and in such instalments as the University may decide. The University decision in both respects shall be final.

†42 Omitted.

LAWS, STATUTES, ORDINANCES, REGULATIONS AND RULES OF THE UNIVERSITY

NOTE

The Extracts from the Act printed in the following Chapters are merely given for convenience.

It is not intended to suggest that no other portions of the Act have any bearing on these subjects.

[The following abbreviations have been used in the pages hereafter in this Handbook:—'Sec.' for a Section of the Act; 'S' for a Statute; 'O' for an Ordinance; 'R' for a Regulation].

CHAPTER I

THE UNIVERSITY

Sec. 3. (1) *The first Chancellor, the first Pro-Chancellor and the first Vice-Chancellor of the University and the first members of the Senate, the Syndicate and the Academic Council and all persons who may hereafter become such officers or members, so long as they continue to hold such office or membership, will be constituted a body corporate by the name of "The University of Rajputana".*

(2) The University shall have perpetual succession and a Common Seal, and shall sue and be sued by the said name.

Sec. 4. The University shall have the following powers, namely:—

(1) to provide for instruction in such branches of learning as the University may think fit, and to make provision for research and for the advancement and dissemination of knowledge;

(1A) to make such provisions as would enable affiliated colleges, recognised schools and approved institutions to undertake specialisation of studies and to organise common laboratories, libraries, museums and other equipment for teaching, instruction, training, and research,

(1B) to establish, maintain and manage colleges, departments and institutes for research or specialised studies.

(2) to hold examinations and to confer degrees and other academic distinctions upon:—

(a) persons who have pursued a course of study in the University, under conditions laid down in the Ordinances and Regulations,

(b) non-collegiate women students, residing within the territorial jurisdiction of the University, who have studied under the conditions laid down for such students in the Ordinances and Regulations,

(c) teachers in schools and colleges, inspecting officers in the departments of education and librarians in colleges, who are residing within the territorial jurisdiction of the University, and have passed the examinations of the University under the conditions prescribed,

(3) to confer honorary degrees or other distinctions on approved persons in the manner laid down in the Statutes;

(4) to confer degrees, diplomas and other academic distinctions on, and to provide teaching, instruction and training for, external students, in the manner prescribed by the Statutes, Ordinances and Regulations;

(4A) to admit colleges, high schools and institutions to the privileges of the University and to withdraw such privileges;

(5) to institute Professorships, Readerships, and any other-teaching posts required by the University;

(6) to appoint persons as Professors, Readers, or otherwise as University Teachers;

(7) to inspect affiliated colleges, recognised schools and approved institutions and to take measures to ensure that proper standards of teaching, instruction and training are maintained in them;

(8) to supervise and control the residence and discipline of students of the University, and to make arrangements for promoting their health and general welfare;

(9) to direct and control secondary education and examinations, and to make provision therefor in Statutes, Ordinances and Regulations;

(10) to institute and award scholarships and other benefits, in accordance with the Statutes and the Regulations;

(11) to demand and receive payment of such fees and other charges as may be authorised by the Ordinances;

(12) to make grants from the funds of the University for assistance to extra-mural teaching;

(13) to establish and administer a University Officers' Training Corps;

(14) to co-operate with other universities and authorities in such manner and for such purposes as the University may determine;

(15) to do all such other acts, whether incidental to the powers aforesaid or not, as may be requisite in order to further the objects of the University as an education albody, and to cultivate and promote the arts, science, and other branches of learning

Sec. 5. The powers of the University conferred by or under this Act shall extend throughout those States of Rajputana which contain colleges or high schools recognised by the University and, in accordance with arrangements which may be made, throughout Ajmer-Merwara. No educational institution beyond these limits shall be associated with or admitted to any privileges of the University.

Sec. 6. (1) The offices of the University and the Senate Hall shall be located at Jaipur, which shall be the headquarters of the Vice-Chancellor.

(2) Convocations shall be held at Jaipur, or, by invitation, in States with affiliated colleges.

Sec. 7. The University shall be open to all persons of either sex, and of whatever race, creed, caste, or class, nor shall any consideration whatsoever be paid to such distinctions in respect of any privilege, award, appointment or promotion, conferred by the University, except as may be specially provided by the Statutes, or, in respect of any benefaction accepted by the University, where such distinction is made a condition thereof by any testamentary or other instrument creating such benefaction:

Provided that nothing in this section shall be deemed to prevent religious instruction being given in the manner prescribed by the Ordinances to those not unwilling to receive it by persons approved for that purpose by the Syndicate.

CHAPTER II

The Visitor.

Sec. 8A. (1) The President of India shall be the Visitor of the University.

(2) The Visitor shall have the right to cause an inspection, to be made by such person or persons as he may direct, of the University, its buildings, and laboratories and equipment and of any institution maintained by the University, and also of the examinations, teaching and other work conducted or done by the University and to cause an inquiry to be made in like manner in respect of any matter connected with the University. The Visitor shall in every case give notice to the University of his intention to cause an inspection or inquiry to be made, and the University shall be entitled to be represented thereat;

(3) The Visitor may address the Vice-Chancellor with reference to the result of such inspection and inquiry, and the Vice-Chancellor shall communicate to the Senate the views of the Visitor with such advice as the Visitor may be pleased to offer upon the action to be taken thereon;

(4) The Senate shall communicate through the Vice-Chancellor to the Visitor such action, if any, as it is proposed to take or has been taken upon the result of such inspection or inquiry;

(5) Where the Senate does not, within reasonable time, take action to the satisfaction of the Visitor, the Visitor may after considering any explanation furnished or representation made by the Senate, issue such directions as he may think fit and the Senate shall comply with such directions.

CHAPTER III

THE PATRON

Sec. 8B. The Maharaj Pramukh of Rajasthan shall be the Patron of the University and shall when present, preside at the convocations thereof.

CHAPTER IV

THE CHANCELLOR

Sec. 10. (1) The Raj Pramukh of Rajasthan shall be the Chancellor of the University and shall, by virtue of his office, be the head of the University;

(2) In the absence of the Patron, the Chancellor shall, when present, preside at the convocations of the University;

(2A) The Chancellor shall, by virtue of his office, be the Chairman of the Senate and as such shall, when present, preside at the meetings thereof;

(3) The Chancellor shall have the right to cause an inspection to be made, by such person or persons as he may direct, of the University, its buildings and equipment, and any institution associated with it, and of the examinations, teaching and other work conducted or done by the University, and to cause an inquiry to be made in like manner in respect of any matter connected with the University. The Chancellor shall in every case give notice to the University of his intention to cause an inspection or inquiry to be made, and the University shall be entitled to be represented thereat;

(4) The Chancellor may address the Vice-Chancellor with reference to the results of such inspection or inquiry and the Vice-Chancellor shall communicate to the Syndicate the views of the Chancellor, and advise the Syndicate upon the action to be taken;

(5) The Syndicate shall report to the Vice-Chancellor for communication to the Chancellor, such action, if any, as it is proposed to take or has been taken upon the results of such inspection or inquiry;

(6) Confirmation of the making, repeal or alteration of Statutes rests with the Chancellor.

(7) The Chancellor shall have such other powers as may be conferred on him by this Act or the Statutes.

CHAPTER V

THE VICE-CHANCELLOR

Sec. 12. (1) The Vice-Chancellor shall be appointed by the Chancellor in the following manner:—

A Committee of three persons, two of whom shall be persons not connected with the University or any affiliated college, recognised school or approved institution, nominated by the Syndicate and one person nominated by the Chancellor, who shall also appoint one of the three as Chairman of the Committee, shall select not less than three persons and shall report its selection to the Syndicate. The Syndicate shall make its recommendations on the persons so selected to the Chancellor, who shall appoint one of such persons as Vice-Chancellor.

(2) The Vice-Chancellor shall be a whole-time officer of the University. He shall hold office for a term of three years, but may, subject to the provisions of sub-section 3, be re-appointed for a second term of three years in continuation of the first term.

(3) No person shall hold the office of the Vice-Chancellor for more than two terms.

(4) The conditions of service of the Vice-Chancellor shall be laid down at the time of his first appointment and shall not be varied during his term of office. When a temporary vacancy in the office of the Vice-Chancellor occurs by reason of leave, illness or otherwise, the Syndicate shall forthwith report the same to the Chancellor who shall make such arrangement for carrying on the office of the Vice-Chancellor as he may think fit.

Sec. 13. (1) The Vice-Chancellor shall be the principal executive and academic officer of the University. He shall, in the absence of the Chancellor, preside at any Convocation of the University. He shall be the *ex-officio* Chairman of the Senate, the Syndicate and the Academic Council and of any board or committee of which he is a member. He shall be entitled to be present and to speak at any meeting of any Authority

or other body of the University, but shall not be entitled to vote thereat unless he is a member.

(2) It shall be the duty of the Vice-Chancellor to see that this Act, the Statutes and the Ordinances are faithfully observed, and he shall have all powers necessary for this purpose.

(3) He shall have power to convene meetings of the Senate, the Syndicate and the Academic Council, and joint meetings of Faculties.

(4) (a) He may take action in any emergency which, in his opinion, calls for immediate action. He shall in such a case, and as soon as may be thereafter, report his action to the officer, authority or other body who or which would ordinarily have deal twith the matter.

(b) When action taken by the Vice-Chancellor under clause (a) affects any person in the service of the University, such person shall be entitled to prefer an appeal to the Syndicate within fifteen days from the date on which such action is communicated to him.

(5) He shall give effect to any order of the Syndicate regarding the appointment, dismissal or suspension of an officer or teacher of the University.

(6) He shall exercise general control in the University.

(7) He shall exercise such other powers as may be prescribed by the Statutes and the Ordinances.

CHAPTER VI

THE REGISTRAR

Sec. 14 (1) The Registrar shall be appointed by the Syndicate on the recommendation of a Selection Committee consisting of the following, namely:—

- (i) the Vice-Chancellor;
- (ii) the Chairman of the Public Service Commission for Rajasthan, or a member thereof nominated in this behalf by the Chairman, and
- (iii) an educationist to be nominated by the Chancellor for each appointment.

(2) The emoluments and conditions of service of the Registrar shall be such as may be determined by the Syndicate.

Sec. 15. The Registrar shall be the custodian of the records and of the common seal of the University on behalf of the Syndicate.

He shall act as the Secretary of the Senate, the Syndicate and the Academic Council. He shall perform such other duties as may be prescribed by the Statutes and the Ordinances or required, from time to time, by the Syndicate or by the Vice-Chancellor.

Sec. 40. The Registrar shall not be offered nor shall he accept any remuneration for any work in the University:

Provided that nothing in this section shall in any way affect his emoluments and conditions of service determined under sub-section (2) of section 14.

CHAPTER VII

THE DEANS OF FACULTIES

Sec. 24B. (1) There shall be a Dean of each Faculty who shall be appointed by the Vice-Chancellor in the following order of preference, namely:—

(a) *For the Faculty of Arts, Science and Commerce:—*

- (i) University Professors or Principals of post-graduate colleges and Principals of degree colleges who have held the office of the Principal of a postgraduate college for at least five years, to be appointed alternately as far as persons in the two categories are available;
- (ii) University Readers in subjects in which there are no University Professors;
- (iii) Principals of degree colleges; and
- (iv) Heads of post-graduate departments.

Note.—The Principal or the teacher to be appointed as Dean must profess a subject included in the Faculty concerned

(b) *For the Faculty of Law:—*

- (i) University Professors of Law or Principals of Law College to be appointed alternately so far as persons in the two categories are available,
- (ii) University Readers in Law in case there are no University Professors;
- (iii) Heads of the Department of Law, being whole time teachers of Law, in affiliated colleges, which are not separate Law Colleges, not below the rank of Professors.

(c) *For the Faculties of Engineering and Technology, Medicine and Pharmaceutics and Education:—*

- (i) Principals of colleges in the Faculty concerned;
- (ii) Heads of departments of subjects in the Faculty concerned.

(d) *For other Faculties.*—The qualifications and conditions of eligibility of the Deans of other Faculties shall be prescribed by the Statutes.

(2) The Dean shall hold office for a term of three years and no person shall be eligible for re-appointment as Dean, until a period of at least six years has elapsed after the expiry of his last term.

Sec. 24C. Functions of Deans of Faculties:—

(1) The Dean of a Faculty shall be responsible for the due observance of the Statutes, Ordinances and Regulations relating to that Faculty.

(2) The Dean shall preside at the meetings of the Faculty and shall record its proceedings.

(3) The Dean shall have the right to be present and speak at the meetings of the Boards of Studies relating to his Faculty but not to vote thereat unless he is a member thereof.

CHAPTER VIII

THE SENATE

Sec. 18. (1) The Senate shall consist of the following persons, namely:—

Class I—Ex-officio Members.

- (i) the Chancellor,
- (ii) the Vice-Chancellor,
- (iii) the Registrar,
- (iv) the Deans of Faculties,
- (v) the Minister of Education in Rajasthan,
- (vi) the Director of Education in Rajasthan,
- (vii) the Director of Medical Services in Rajasthan,
- (viii) the Director of Agriculture in Rajasthan,
- (ix) the Director of Industries in Rajasthan,
- (x) the Chief Engineer (Buildings and Roads) in Rajasthan,

- (xi) the Members of the Syndicate,
- (xii) the Heads of University Departments of the status of a Professor or a Reader,
- (xiii) the Principals of post-graduate colleges, and
- (xiv) such other ex-officio members, not exceeding four, as may be provided for in the Statutes.

Class II—Life Members.

- (xv) Every person, who has made a donation to the University at any one time of an amount of, or of property valued at, one lakh of rupees or more, or a representative nominated in this behalf by such person during his life time, provided that in the case of the donor being a corporate body the membership shall last for a period of 20 years from the date of acceptance by the University of such donation.

Class III—Other Members.

- (xvi) Five persons elected by the Academic Council from among its members,
- (xvii) Five persons, not being teachers, elected by the registered graduates of the University from among themselves,
- (xviii) Five persons, of whom at least two shall be principals of degree colleges, elected by the principals of colleges other than post-graduate colleges, from among themselves,
- (xix) One Principal of a Medical College, nominated in rotation by the Vice-Chancellor,
- (xx) One Principal of an Engineering College, nominated in rotation by the Vice-Chancellor,
- (xxi) One Principal of a Teachers' Training College, nominated in rotation by the Vice-Chancellor,
- (xxii) One Principal of an Agricultural College, nominated in rotation by the Vice-Chancellor,
- (xxiii) Five persons elected by teachers of affiliated colleges and approved institutions, other than principals thereof, from among themselves,
- (xxiv) Four Head masters of high schools nominated by the Education Department of the Government of whom

at least one shall be the head mistress of a girls' high school,

(xxv) Persons who have rendered distinguished service to education, not exceeding five in number, appointed by the Chancellor,

(xxvi) Persons not exceeding five in number nominated by Government.

(2) Members of the Senate other than ex-officio members and life members shall hold office for a period of 5 years.

Sec. 19. (1) The Senate shall, on a date to be fixed by the Vice-Chancellor, meet once a year at a meeting to be called the annual meeting of the Senate.

(2) The Vice-Chancellor may, whenever he thinks fit, and shall upon a requisition in writing signed by not less than twenty-five members of the Senate, convene a special meeting of the Senate.

Sec. 20. *Subject to the provisions of this Act, the Senate shall perform the following functions:—*

(a) of making Statutes, and of amending and repealing Statutes, subject to confirmation by the Chancellor,

(b) of considering and cancelling Ordinances, and

(c) of considering and passing resolutions on the annual report, the annual accounts and the financial estimates; and shall perform such other functions as may be defined by this Act or the Statutes.

Sec. 27. *Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—*

- (1) conferment of honorary degrees;
- (2) holding of convocations to confer degrees;
- (3) powers and functions of the officers of the University and their mode of appointment, save as provided in this Act;
- (4) constitution, powers and functions of the Authorities, Boards and Committees of the University, save as provided in this Act;
- (5) institution and maintenance by the University of departments, colleges, institutes of research or specialised studies and hostels;
- (6) fees to be charged for courses of study and curricula prescribed

by the University and for admission to its examinations, degrees and diplomas;

- (7) inspection and recognition, affiliation or approval of High Schools and Hostels, Colleges and Institutions;
- (8) conditions governing the appointment, duties and remuneration of examiners;
- (9) acceptance and management of bequests, donations and endowments;
- (10) registration of graduates and maintenance of the register of registered graduates;
- (11) procedure at meetings of the Senate and transaction of its business;
- (12) constitution of pension, insurance, gratuity and provident fund for the benefit of officers, teachers, clerical and inferior staff of the University;
- (13) terms and vacation of the University;
- (14) degrees, diplomas and other academic distinctions to be awarded by the University; and
- (15) all matters which by this Act are to be or may be prescribed by Statutes, or which are dealt with in the Statutes set out in the Schedule to this Act.

Sec. 28. (2) The Statutes may be amended, repealed or added to by Statutes made by the Senate in the manner hereinafter appearing.

(3) The Syndicate may propose to the Senate the draft of any Statute to be passed by the Senate. Such draft shall be considered by the Senate at its next meeting. The Senate may pass the Statute, or a part of it, in the form in which it has been proposed, or may reject the Statute or part of it, or may return the Statute to the Syndicate for reconsideration, either in whole or in part, together with any amendments which the Senate may suggest.

(4) Where any Statute or part of a Statute has been returned to the Syndicate for reconsideration, the Syndicate will formulate its opinion, which will be placed before the Senate at its next meeting.

(5) Where any Statute has been passed or a draft of a Statute or part thereof has been rejected by the Senate, it shall be submitted to the Chancellor, who may refer the Statute or draft back to the Senate for further consideration or, in the case of a Statute passed by the Senate, assent thereto or withhold his assent. A Statute passed by the Senate shall have no validity until it has been assented to by the Chancellor.

(6) The Syndicate shall not propose the draft of any Statute affecting the status, powers or constitution of any authority of the University until such authority has been given an opportunity of expressing an opinion upon the proposal. Any opinion so expressed shall be in writing and shall be considered by the Senate, and shall be submitted to the Chancellor along with the Senate's decision in respect of the draft Statute.

(7) Any member of the Senate may propose to the Senate the draft of any Statute and the Senate may refer such draft for consideration to the Syndicate, which may either reject the proposal or submit the draft to the Senate in such form as the Syndicate may approve, and the provisions of this section shall apply in the case of any draft so submitted as they apply in the case of a draft proposed to the Senate by the Syndicate.

Sec 30 (3) All Ordinances made by the Syndicate shall be submitted to the Senate, and shall be considered by the Senate at its next meeting. The Senate shall have power by a resolution passed by a majority of not less than two-thirds of the members voting, to cancel any Ordinance made by the Syndicate, and such Ordinance shall from the date of such resolution be void.

Sec. 8A. (3) The Visitor may address the Vice-Chancellor with reference to the result of such[†] inspection and inquiry, and the Vice-Chancellor shall communicate to the Senate the views of the Visitor with such advice as the Visitor may be pleased to offer upon the action to be taken thereon;

(4) The Senate shall communicate through the Vice-Chancellor to the Visitor such action, if any, as it is proposed to take or has been taken upon the result of such inspection or inquiry;

(5) When the Senate does not, within reasonable time, take action to the satisfaction of the Visitor, the Visitor may after considering any explanation furnished or representation made by the Senate, issue such directions as he may think fit and the Senate shall comply with such directions

REGISTRATION OF GRADUATES.

Sec. 2 (b) "Registered graduate" means a graduate registered under the provisions of this Act.

Sec. 36 The Syndicate shall, with the concurrence of not less

[†]Refer Section 8 A (2) of the Act.

than two-thirds of the members of the Senate, have power to remove the name of any person from the register of registered graduates.

S. 17. The following persons shall, on payment of such fees as may be prescribed by the Statutes, be entitled to have their names enrolled in the register of registered graduates:-

(1) Graduates of the University of Rajputana of three years' standing and upwards (counted from the date of passing), that have taken their degree at a Convocation or in absentia.

(2) For a period of five years' from the commencement of the Act all graduates of 3 years' standing or upwards of any Indian University incorporated by any Law for the time being in force or of any other University which may be approved for this purpose by the Syndicate, provided (i) they belong to any State of Rajputana, which has accepted the University Act, by birth or domicile, as defined by that State; or (ii) they are inspectors of schools or members of the staff in an affiliated college or recognised high school in such a State.

Note—The time limit imposed by this clause relates to applications for enrolment and not to be continuance as registered graduates of those enrolled.

S. 18. (1) Applications for enrolment in the register of registered graduates shall be made by the applicant himself to the Registrar in the form provided for the purpose.

N B.—The words "made by the applicant himself" mean that the application for registration is to be signed by the applicant himself and not by any one else on his behalf. The application may, of course, be sent to the University either in person, through a messenger or by post.

(2) Each applicant shall send with the application a fee of Rs. 10 for registration.

(3) On receipt of the application the Registrar, if he finds that the applicant is duly qualified, shall cause the name of the applicant to be entered in the register.

(4) No graduate shall be enrolled during a period of two months immediately preceding an election of registered graduates to the Senate.

(5) Every registered graduate shall inform the Registrar in writing of all changes in his permanent address.

ELECTION OF REGISTERED GRADUATES

O. 1. The Registrar shall maintain an electoral roll showing the names and addresses of all registered graduates qualified to vote.

O. 2. The rolls shall be prepared at least two months before the date of election. They shall be prepared and published once every year on the 31st of March. The entire rolls of the registered graduates shall be printed at least once in three years but every year a supplement shall be printed which shall include the name of the persons enrolled and the changes notified to the Registrar since the last publication of the entire roll.

O. 3. The Vice-Chancellor shall have the authority to correct the roll or the annual supplement by adding, altering or omitting names, if any omission or wrong entries be brought to his notice at least 21 clear days before the date of election. The Vice-Chancellor's decision in the matter shall be final.

O. 4. Copies of electoral rolls shall be available at the University office on payment of Re. 1/- per copy.

O. 5. In the year in which an election is to take place the Registrar shall issue a notice of election on or about the 1st of August stating the number of vacancies on the Senate to be filled in by election by registered graduates and asking for nominations in that behalf within a time to be named named in the notice. Such time shall be not less than 15 days from the date on which the notice is published. The notice shall be published in the Rajasthan gazette and in the newspapers to be selected by the Vice-Chancellor.

O. 6. Any two electors may nominate as a candidate any person named in the electoral roll by sending to or delivering at University Office a nomination paper by the specified date before 4 o'clock afternoon.

O. 7. Nomination papers shall be in the prescribed form and must be dated and signed by two electors and must contain the names in full, addresses and designations, if any, of the two signatories and of the candidate nominated. No person shall be nominated as a candidate for election unless he signified his consent on the nomination paper. A nomination paper which does not comply with these formalities shall be rejected.

O. 8. At any time before the date and hour fixed as the last day hour for the receipt of nominations, it shall be open to a candidate to withdraw from an election, provided that the candidate wishing to withdraw sends in to the Registrar, so as to reach him before the day and hour fixed as aforesaid, an intimation of withdrawal in writing signed by the candidate and attested.

O. 9. (a) As soon as possible after the last day fixed for the receipt of nominations, at a time and place fixed by the Vice-Chancellor, the Vice-Chancellor or any person or persons nominated by him shall scrutinize the nominations. The candidate or his agent duly authorised by him in writing in this behalf shall be entitled to be present at such scrutiny.

(b) In the case of a dispute or doubt, the Vice-Chancellor shall determine whether a person is disqualified under the Ordinances or not.

O. 10. If the number of candidates nominated does not exceed the number of vacancies to be filled, the candidates so nominated shall be declared to have been elected.

O. 11. On the expiry of the time fixed by the notice, the Registrar shall, after scrutiny of nomination papers, prepare a list of all candidates nominated. He shall then send to each elector at his registered address under a registered cover—

(a) a voting paper containing the numbers and names of the persons nominated and bearing the name of the constituency,

(b) a smaller cover bearing the name of this constituency, and

(c) a bigger cover on which are printed, on the left half the number of the elector and the name of the constituency and a form of the certificate of identity, and on the right half, the words: "To the Registrar, University of Rajputana, Jaipur". The voter shall enclose the voting paper, duly filled in but without the name or the signature of the voter in the smaller cover, and enclose this again in the bigger cover, sign the certificate of identity on it, get his signature attested and send it to the Registrar so as to reach the University Office, by a specified date which shall be not less than 21 days from the date on which the voting paper was posted by the Registrar.

O. 12. (a) The attesting officer shall be one of the following persons:—

(i) The Principal of an affiliated college of the University or of any college affiliated to any recognised university or board of intermediate education.

(ii) The chief education officer of a State or Province,

- (iii) A magistrate of the first class or a judicial officer of rank not lower than that of Munsif.

At places where no such officer, as is mentioned above, is stationed, the attestation may be made by the headmaster of a high school recognised by a recognised board of high school education.

No voter shall attest his own Certificate of Identity.

- (b) The attesting officer will attest with his signature and designation.

O. 13. An elector who has not received his voting paper and other connected papers sent by post or whose papers, before they are returned to the Registrar, have been lost or spoilt in such manner that they cannot be conveniently used, on his transmitting to the Registrar a declaration to that effect signed by himself, may require the Registrar to send him new papers in place of those not received, spoilt or lost; and if the papers have been spoilt, the spoilt papers shall be returned to the Registrar who shall cancel them on receipt. In every case when new papers are issued, a mark shall be placed against the number of the elector's name in the Register to denote that new papers have been issued in place of those not received, spoilt or lost.

O. 14. A voting paper shall be, as far as possible, in the following form:—

VOTING PAPER

The University of Rajputana

Election by.....

Mark order of preference in spaces below	Names of candidates nominated and their numbers on the electoral roll where possible.

O. 15. (1) Each elector shall have one transferable vote.

(2) An elector in recording his vote—

- (a) must place on his voting paper the figure 1 opposite the name of the candidate for whom he votes; and

- (b) may in addition indicate the order of his choice or preference for as many other candidates as he pleases by placing against their respective names the figures 2,3,4,5 and so on, in consecutive numerical order.

O. 16. A voting paper is invalid if—

- (a) the figure 1 standing alone, indicating a first preference is not placed;
or
(b) the figure 1 standing alone, indicating a first preference, is placed opposite the name of more than one candidate;
or
(c) the figure 1 standing alone, indicating a first preference, and some other figures are placed opposite the name of the same candidate;
or
(d) it cannot be determined for which candidate the first preference of the voter is recorded;
or
(e) any mark is placed by the voter by which he may afterwards be identified;
or
(f) there is any erasure or alteration in the figures indicating the voter's preference.

O. 17. All voting papers shall be scrutinized by the Registrar and such other person or persons as may be nominated by the Vice-Chancellor.

O. 18. After the voting papers have been counted the Registrar shall examine the voting papers and sort them into parcels according to the first preference recorded for each candidate, rejecting voting papers that are invalid.

O. 19. The Registrar shall then count the number of papers in each parcel and shall credit each candidate with a number of votes equal to the number of valid papers on which a first preference has been recorded for such candidate and he shall ascertain the total number of valid papers.

O. 20. The Registrar shall then divide the total number of valid papers by a number exceeding by one, the number of vacancies to be filled. The result increased by one (any fractional remainder being disregarded) shall be the number of votes sufficient to secure the election of a candidate. This number is hereinafter called the "quota"

O. 21. If, at the end of any count the number of votes

to a candidate is equal to or greater than the quota, that candidate shall thereupon be elected.

O. 22. (1) If at the end of any count the number of votes credited to a candidate is greater than the quota, the surplus shall be transferred, as in this Ordinance provided, to the continuing candidates for whom the next available preferences have been recorded on the voting papers in the parcel or sub-parcel last received by the elected candidate.

(2) (a) If more than one candidate has a surplus, the largest surplus shall be first dealt with.

(b) If two or more candidates have each an equal surplus, the surplus of the candidate with the greatest number of votes at the first count at which the candidates in question have an unequal number of votes shall be first dealt with. When the numbers of votes credited to such candidates are equal at all counts, the Registrar shall determine by lot which surplus he will first deal with.

(3) The Registrar need not transfer a surplus when that surplus, together with any other surplus not transferred, is less than the difference—

(a) Between the votes of the candidate lowest on the poll and the votes of the next highest candidate;

or

(b) between the total of the votes of the two or more candidates lowest on the poll and the votes of the next highest candidate, provided that the exclusion from the poll of the aforesaid two or more candidates lowest on the poll shall not reduce the number of continuing candidates below the number of vacancies remaining to be filled.

(4) (a) If the votes credited to an elected candidate consist of original votes only, the Registrar shall examine all the papers contained in the parcel of the elected candidate whose surplus is to be transferred;

(b) If the votes credited to an elected candidate consist of original and transferred votes, or of transferred votes only, the Registrar shall examine the papers contained in the sub-parcel last received by the elected candidate whose surplus is to be transferred.

(c) In either case the Registrar shall sort the transferable papers into sub-parcels according to the next available preferences recorded thereon, shall make a separate

sub-parcel of the non-transferable papers and shall ascertain the number of papers in each sub-parcel of non-transferable papers.

(5) If the total number of papers in the sub-parcels of transferable papers is equal to or less than the surplus, the Registrar shall transfer the whole of each sub-parcel of transferable papers to the continuing candidate indicated thereon as the electors' next available preference, and shall set aside as a separate parcel so many of the non-transferable papers as are not required for the quota of the elected candidate. The particular papers set aside shall be those last filed in the parcel of non-transferable papers.

(6) (a) If the total number of transferable papers is greater than the surplus, the Registrar shall transfer from each sub-parcel of transferable papers to the continuing candidate indicated thereon as the electors' next available preference the number of papers which bears the same proportion to the number of papers in the sub-parcels as the surplus bears to the total number of transferable papers;

(b) The number of papers to be transferred from each sub-parcel shall be ascertained by multiplying the number of papers in the sub-parcel by the surplus and dividing the result by the total number of transferable papers. A note shall be made of fractional part, if any, of each number so ascertained;

(c) If owing to the existence of such fractional parts, the number of papers to be transferred is less than the surplus, so many of these fractional parts taken in the order of their magnitude, beginning with the largest, as are necessary to make the total number of papers to be transferred equal to the surplus shall be reckoned as of the value of unity, and the remaining fractional parts shall be ignored;

(d) If two or more fractional parts are of equal magnitude, that fractional part shall be deemed to be the largest which arises from the largest sub-parcel, and if the sub-parcels in question are equal in size, the fractional part credited to the candidate with the greatest number of votes at the first count at which the candidates in question have an unequal number of votes shall be deemed to be the largest. When the number of votes credited to such candidates are equal at all counts, the Registrar shall determine by lot which fractional part shall be deemed to be the largest;

- (e) The particular papers transferred from each sub-parcel shall be those last filed in the sub-parcel and each paper so transferred shall be marked in such a manner as to indicate the count at which the transfer took place.

O. 23. (1) If, at the end of any count, no candidate has a surplus or if any existing surplus need not be and is not transferred, and one or more vacancies remain to be filled—

- (a) the Registrar shall exclude from the poll the candidate lowest on the poll;
- (b) if the total of the votes of the two or more candidates lowest on the poll together with any surplus not transferred is less than the number of votes credited to the next highest candidate the Registrar may at the same count exclude the aforesaid two or more candidates lowest on the poll, provided that the exclusion of these candidates shall not reduce the number of continuing candidates below the number of vacancies remaining to be filled.

(2) If, when a candidate has to be excluded, two or more candidates have each the same number of votes and are lowest on the poll, the candidate with the lowest number of votes at the first count at which the candidates in question have an unequal number of votes shall be excluded, and when the numbers of votes credited to these candidates are equal at all counts, the Registrar shall determine by lot who shall be excluded.

(3) Upon the exclusion of any candidate, the Registrar, save as hereinafter provided, shall examine all the papers credited to that candidate; shall sort the transferable papers into sub-parcels according to the next available preferences recorded thereon for continuing candidates; shall transfer each sub-parcel to the candidate for whom that preference is recorded; and shall set aside as a separate sub-parcel the non-transferable papers.

O. 24 (1) If at the end of any count, the number of elected candidates is equal to the number of vacancies to be filled, no further transfer of votes shall be made.

(2) If, on the exclusion of a candidate or candidates the number of the then continuing candidates is equal to the number of vacancies unfilled the continuing candidates shall thereon be elected, and no further transfer of votes shall be made.

O. 25. The order of priority of election of elected members shall be the order in which they are severally elected. If, at the end of any count two or more candidates are elected, the order of priority shall be according to the number of votes credited to such candidates beginning with the greatest.

O. 26. (1) Whenever any transfer is made, each sub-parcel of papers transferred shall be placed on the top of the parcel, if any, of papers of the candidate to whom the transfer is made and that candidate shall be credited with a number of votes equal to the number of papers transferred to him.

(2) Non-transferable papers (except such as in the transfer of a surplus may be required for the quota of the elected candidate) shall be set aside as a separate parcel together with any parcel of non-transferable papers already set aside.

(3) On the transfer of the surplus of an elected candidate, all papers not transferred to continuing candidates and not set aside as provided in the preceding paragraph, shall be placed together in one parcel as the quota of the elected candidate and the parcel shall be marked with the name of the elected candidate.

O. 27. After the scrutiny is completed, the Registrar shall forthwith report to the Vice-Chancellor the result of the scrutiny.

O. 28. On the result of the election being reported as aforesaid, the results of the scrutiny, showing for each candidate the number of first votes obtained and the successive additions to or subtractions from the number till the candidate was excluded or elected, shall be put up on the Notice Board by the Registrar and the voting papers shall be destroyed.

O. 29. Names of the elected candidates shall then be notified by the Registrar. No election shall be deemed to be invalid by reason of any communication or the voting paper not being delivered to any voter, or to the Registrar.

O. 30. In these Ordinances unless there is anything repugnant in the subject or context—

1. The expression "elector" means a registered graduate entitled to vote at the election
2. The expression "continuing candidate" means any candidate not elected or not excluded from the poll at any given time.
3. The expression "first preference" means the figure "1" standing alone opposite the name of a candidate; "second preference" means the figure "2" standing alone opposite the name of a candidate in succession to the figure "1"; "third preference" means the figure "3" standing alone opposite

the name of a candidate in succession to the figures "1" and "2"; and so on.

4. The expression "next available preference" means a second or subsequent preference recorded in consecutive numerical order for a continuing candidate; the preferences, next in order on a voting paper for candidates already elected or excluded from the poll being ignored.
5. The expression "transferable paper" means a voting paper on which following the first preference a second or subsequent preference is recorded in consecutive numerical order for a continuing candidate.
6. The expression "non-transferable paper" means a voting paper on which no second or subsequent preference is recorded for a continuing candidate; provided that a paper shall be deemed to have become a nontransferable paper whenever—
 - (a) the names of two or more candidates (whether continuing or not) are marked with the same number, and are next in order of preference;
or
 - (b) the name of the candidate next in order of preference (whether continuing or not) is marked—
 - (i) by a number not following consecutively after some other number on the voting paper;
or
 - (ii) by two or more numbers;
or
 - (c) for any other reason it cannot be determined for which of the continuing candidates the next available preference of the elector is recorded.
7. The expression "Original vote" in regard to any candidate means a vote derived from a ballot paper on which a first preference is recorded for that candidate.
8. The expression "transferred vote" in regard to any candidate means a vote derived from a voting paper on which a second or subsequent preference is recorded for that candidate.
9. The expression "surplus" means the number of votes by which the total number of the votes, original and transferred, credited to any candidate, exceeds the quota.

10. The expression "count" means—

(a) all the operations involved in the counting of the first preferences recorded for candidates;

or

(b) all the operations involved in the transfer of an elected candidate;

or

(c) all the operations involved in the transfer of the surplus of an excluded candidate or of two or more candidates excluded together.

Meetings of the Senate.

S. 43. The Senate shall meet ordinarily once a year in or about November and immediately before or after Convocation on a date fixed, and at other times when convened, by the Vice-Chancellor. This meeting shall be deemed the Annual Meeting of the Senate.

S. 44. At the Annual Meeting of the Senate the budget for the ensuing financial year and the annual report shall be presented and representatives of the Senate shall be elected to such authorities and bodies as include representatives of the Senate. The annual report of the University shall also be placed before this meeting.

S. 45 If the Vice-Chancellor is absent from any meeting, the members present shall elect a Chairman from among the members of the Syndicate for the meeting. During the temporary absence of the Vice-Chancellor from the meeting the senior member present shall preside.

S. 46. At all meetings of the Senate twenty members, inclusive of the Chairman, shall form a quorum.

S. 47. If there is no quorum, 15 minutes after the notified time of the meeting, the Chairman may declare that there shall be no meeting.

S. 48. If in the course of a meeting, any member calls attention to the absence of a quorum the Chairman shall dissolve the meeting.

S. 49. Thirty clear days before the day fixed for a meeting of the Senate, the Registrar shall forward to each member of the Senate a statement of business to be brought before the meeting and of the terms of all resolutions to be then proposed, together with the name of the proposer of each, intimation in writing of which has previously reached him. The inclusion of a Report of any Committee of the Senate in the agenda paper shall be held to be equivalent to notice of motion for its adoption.

S. 50. Notice in writing of proposed amendments and the terms thereof and of motions for any change in the order of business as set forth in the statement must be forwarded so as to reach the Registrar fifteen clear days before the day of meeting.

S. 51. No proposal shall be entertained by the Senate unless it has been received two months in advance.

S. 52. Every motion shall be moved by the member in whose name it stands, or if he is absent or declines to move it, it may be moved by any other member.

S. 53 The Registrar shall eight clear days before the day of meeting, forward to each member of the Senate a statement of all the motions and amendments; and no motion or amendment of which such notice has not been given, shall be put to the meeting, other than a motion for dissolution, adjournment, or suspension of the sitting, for passing to the next business on the statement, for directing the Syndicate to review their decision, for referring the matter under consideration to the Syndicate or a Faculty for report, or an amendment which shall be accepted by the Chairman as merely formal.

S. 54 All questions as to whether proper notice of a motion or an amendment has been given shall be decided by the Chairman of the meeting whose decision shall be final.

S. 55. The Chairman at a meeting of the Senate shall have a vote and a casting vote

S. 56. Every motion shall be affirmative in form and shall begin with the word "that."

S. 57. Every motion must be seconded, otherwise it shall drop. The seconder of a motion may reserve his speech with the permission of the Chairman.

S. 58. When a motion which is in order has been seconded, it shall be stated from the Chair, before it is discussed.

S. 59. If no member rises to speak to the motion after it has been stated from the Chair, the Chiraman shall proceed to put the question to the vote.

S. 60. Not more than one motion and one amendment thereto shall be placed before the meeting at the same time.

S. 61. A motion once disposed of shall not be again brought forward at the same meeting, or at any adjournment thereof.

S. 62. Every amendment must be relevant to the motion upon which it is moved.

S. 63. No amendment shall be proposed which substantively raises a question already disposed of by the meeting, or which is inconsistent with any resolution already passed by it.

S. 64. The order in which amendments, of which previous notice has been given, are to be brought forward, shall be determined by the Chairman.

S. 65. An amendment must be seconded in the same way as a motion, otherwise it shall drop. A seconder of an amendment may reserve his speech with the permission of the Chairman.

S. 66. When an amendment, which is in order, has been moved and seconded, it shall be stated from the Chair.

S. 67. The mover of an amendment or of a motion for dissolution or adjournment, has no right of reply.

S. 68. No members shall be allowed to speak more than once in the course of the discussion on a motion except the mover of the original resolution who may reply at the end of the discussion.

S. 69. No member shall speak to the question after the mover has entered on his reply.

S. 70. A motion "that this meeting be now dissolved" or "that this meeting be now adjourned" may be moved at any time as a distinct question but not as an amendment, nor so as to interrupt a speech.

S. 90. At the time of the appointment of a committee one of its members shall be elected as Chairman of the Committee by the Senate.

S. 91. In all cases of election other than those specifically provided for, the candidates shall be proposed and seconded. If no more candidates are nominated than there are vacancies to be filled, the Chairman shall declare these candidates to be elected. If the number of candidates exceeds the number of vacancies the voters shall state on the ballot paper the names of the candidates they desire to vote for up to the limit of the number of vacancies.

S. 92. No matter which has been decided by the Senate shall, within a period of twelve months, be reconsidered, except at a special meeting of the Senate convened for the purpose upon a requisition of not less than 25 members. No motion for revision shall be carried unless three-fourths of the members present at such meeting vote in favour thereof.

Note.—For the purpose of this Statute the interval between two annual meetings of the Senate shall be counted as 12 months.

S. 93. In any case not provided for by these Statutes, the Chairman shall be entitled to give his own ruling as to procedure.

S. 94. Representatives of the press and visitors may be admitted to meetings of the Senate, provided they have obtained the permission of the Vice-Chancellor.

S. 95. Only decisions, not speeches, shall be printed in the records.

S. 96. After every meeting or adjourned meeting of the Senate, the Registrar shall, as early as possible within six weeks, send a copy of the draft minutes of such meeting to the address of each member of the Senate. In the event of any exception being taken to the correctness of the minutes as circulated the attention of the Chairman shall be called to the matter at the next meeting of the Senate before confirmation.

CHAPTER IX

THE SYNDICATE

Sec 21. (1) The Syndicate shall be the executive body of the University and shall consist of the following persons namely:—

(i) the Vice-Chancellor;

- (ii) the Deans of the Faculties of Arts, Science and Commerce;
- (iii) two Deans of Faculties nominated in rotation by the Vice-Chancellor from the Deans of Faculties other than those of Arts, Science and Commerce;
- (iv) the Director of Education in Rajasthan;
- (v) three persons elected by the Principals of affiliated colleges, other than Intermediate colleges, from among themselves;
- (vi) three persons, not being teachers elected by the Senate from among its members; and
- (vii) two educationists nominated by the Chancellor

(2) The term of office of the elected and nominated members of the Syndicate shall be three years.

Sec. 22. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate shall exercise the following powers and perform the following functions, namely:—

- (a) to make, amend and cancel ordinances;
- (b) to hold, control and administer property and funds of the University;
- (c) to accept, on behalf of the University, donations, bequests or transfers of moveable or immoveable property;
- (d) to administer any funds or resources placed at the disposal of the University for specific purposes;
- (e) to invest monies belonging to the University;
- (f) to enter into, vary, carry out, confirm and cancel contracts on behalf of the University;
- (g) subject to the provisions of this Act and the Statutes, to appoint officers (other than the Chancellor, Vice-Chancellor and Deans of Faculties), teachers, clerical staff and servants of the University, and to define their duties, emoluments and conditions of service and to provide for the filling up of temporary vacancies in their posts;

- (h) to determine the form, provide for the custody, and regulate the use of the Common Seal of the University;
- (i) subject to the Statutes, to inspect and to affiliate, recognise or approve colleges, schools and hostels, or institutions, and to withdraw affiliation recognition or approval from them;
- (j) to arrange for the holding of examinations and publishing results thereof;
- (k) to maintain proper standards of teaching and examination in consultation with the Academic Council;
- (l) to recommend minimum scales of salaries of teachers in colleges and of those teaching the IX and X classes in high schools; and
- (m) to exercise all other powers of the University, not otherwise provided for by this Act or Statutes.

S. 7. Meetings of the Syndicate shall be held ordinarily at least once in every two months, and at other times when convened by the Vice-Chancellor. One-third of the members shall constitute a quorum.

Sec. 29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

- (1) courses of study and curricula to be laid down for all degrees and diplomas of the University;
- (2) conditions under which students shall be admitted to courses of study and curricula and examinations for degrees, diplomas and other academic distinctions,
- (3) conditions of residence, conduct and discipline of students of the University;
- (4) conduct of examinations;
- (5) recognition of supervisors for guiding research;
- (6) emoluments and conditions of service of University teachers;
- (7) mode of execution of contracts for, or on behalf of the University;

- (8) rules to be observed and enforced by affiliated colleges and recognised high schools in respect of transfer of students;
- (9) all matters which by this Act or the Statutes are to be or may be provided for by Ordinances; and
- (10) generally all matters for which provision is, in the opinion of the Syndicate, necessary for the exercise of the powers conferred or the performance of the duties imposed upon the Syndicate by this Act or the Statutes.

Sec. 30. (1) Save as otherwise provided in this section Ordinances shall be made by the Syndicate, provided that no Ordinance concerning admission to the University or to its examinations, courses of study, schemes of examination, attendance, and appointment of examiners shall be considered unless a draft of such Ordinance has been proposed by the the Academic Council.

(2) The Syndicate shall not have power to amend any draft proposed by the Academic Council under the provisions of sub-section (1), but may reject it or return it to the Academic Council for reconsideration either in whole or in part, together with any amendments which the Syndicate may suggest.

(3) All Ordinances made by the Syndicate shall be submitted to the Senate, and shall be considered by the Senate at its next meeting. The Senate shall have power, by a resolution passed by a majority of not less than two-thirds of the members voting, to cancel any Ordinance made by the Syndicate, and such Ordinance shall from the date of such resolution be void.

Sec. 31. Regulations.—The Academic Council may, subject to the approval of the Syndicate, make regulations, consistent with this Act, the Statutes and the Ordinances, providing for all matters which by this Act, the Statutes or the Ordinances are to be provided for by regulations and for all other matters solely lying within its purview.

Sec. 41 Members of the Syndicate not to get remuneration.—No member of the Syndicate shall get any remuneration for any work done by him for the University, whether as an examiner or as a tabulator. If, however, a member of the Syndicate is specially invited to become an examiner, the maximum amount of remuneration payable to him shall not exceed one hundred rupees.

Meetings of the Syndicate

O. 31. The meetings of the Syndicate shall be held once in two months as laid down in the Statutes, or at such times as the Vice-Chancellor may direct.

O. 32. The Vice-Chancellor shall preside at the meetings of the Syndicate. In the absence of the Vice-Chancellor, a Chairman shall be elected, but in his temporary absence, he will nominate a Chairman.

O. 33. One-third of the members shall constitute a quorum.

O. 34. The Registrar shall, not less than 15 days previous to each ordinary meeting of the Syndicate, issue to each member a notice of the time and the place of the meeting together with the agenda paper. In the case of a special meeting the Registrar shall give such previous notice of the time and place of the meeting as the circumstances in each case may permit.

O. 35. Notice of a motion or resolution to be included in the supplementary agenda of an ordinary meeting of the Syndicate must be in the hands of the Registrar not less than 7 clear days before the date of the meeting.

O. 36. Amendments to motions on the agenda and new proposals can be moved at an ordinary meeting with the permission of the Chairman.

O. 37. At meetings of the Syndicate the Chairman shall have a vote and a casting vote.

O. 38. The Chairman at any meeting may, at his discretion, adopt the procedure prescribed for discussion of matters at meetings of the Senate, in so far as he thinks fit.

O. 39. Any member of an authority or body of the University may make any recommendation or proposal to the Syndicate. It will be included in the agenda at the discretion of the Vice-Chancellor.

CHAPTER X.

THE ACADEMIC COUNCIL.

Sec. 23. (1) The Academic Council shall be the academic body of the University and shall consist of the following persons,

namely:—

- (i) the Vice-Chancellor,
- (ii) the Deans of Faculties,
- (iii) the Heads of University Departments of the status of a Professor or a Reader,
- (iv) the Conveners of the Boards of Studies, and
- (v) five persons, co-opted by the Academic Council who possess special attainments in particular studies and who are not teachers in the University or any affiliated college or recognised school or approved institution.

(2) The term of office of the members of the Academic Council, other than ex-officio members, shall be three years.

Sec. 23A. (1) The Academic Council shall have control and general regulation of, and be responsible for the maintenance of the standards of teaching and examination within the University.

(2) Without prejudice to the generality of the foregoing provision and subject to such conditions as may be prescribed by or under the provisions of this Act, the Academic Council shall exercise the following powers and perform the following functions, namely:—

- (i) subject to the approval of the Syndicate, to make, amend and cancel Regulations laying down courses of study and curricula;
- (ii) to propose to the Syndicate Ordinances concerning admission to the University or to its examinations, courses of study and curricula, schemes of examination, and attendance; provided that proposals regarding courses of study and curricula and schemes of examination shall be made after considering the reports, when necessary, of the Faculty or Faculties concerned;
- (iii) to make proposals regarding the maintenance of standards of teaching and examination;
- (iv) to advise the Syndicate regarding the institution of University teaching posts in particular subjects;
- (v) after considering the recommendations of the Faculty

concerned, to advise the Syndicate regarding the institution of Boards of Studies and their strength;

- (vi) to advise the Syndicate regarding University fees;
- (vii) to advise the Syndicate regarding equivalence of examinations and recognition of the examinations of other bodies;
- (viii) to advise the Syndicate regarding the University Library and the appointment of a University Library Committee;
- (ix) to advise the Syndicate regarding the conditions of award and tenure of University scholarships and other benefits;
- (x) to refer matters to Faculties and Boards of Studies;
- (xi) to promote research; and
- (xii) to advise the Syndicate regarding all other academic matters.

S. 10. Meetings of the Academic Council shall be held once a year, and otherwise when convened by the Vice-Chancellor. Fifteen shall constitute a quorum.

Sec. 30. (1) Save as otherwise provided in this section Ordinances shall be made by the Syndicate, provided that no Ordinance concerning admission to the University or to its examinations, courses of study, schemes of examination, attendance, and appointment of examiners shall be considered unless a draft of such Ordinance has been proposed by the Academic Council.

(2) The Syndicate shall not have power to amend any draft proposed by the Academic Council under the provision of subsection (1), but may reject it or return it to the Academic Council for reconsideration either in whole or in part, together with any amendments which the Syndicate may suggest.

Sec. 31. The Academic Council may, subject to the approval of the Syndicate, make regulations, consistent with this Act, the Statutes and the Ordinances, providing for all matters which by this Act, the Statutes or the ordinances are to be provided for by regulations and for all other matters solely lying within its purview.

**Regulations for the conduct of the meetings of the
Academic Council.**

R. 1. The annual meeting of the Academic Council shall radinarily be held towards the end of January or the beginning of February each year, and the Academic Council shall consider at this meeting, among other things, the recommendations made by the Faculties regarding the courses of study for the examinations of the University. Other meetings may be held at such other times as the Vice-Chancellor may direct.

R. 2. The Registrar shall, not less than 21 days previous to each meeting of the Academic Council, issue to each member a notice stating the time and place of the meeting along with the agenda paper.

R. 3. 15 members shall form a quorum.

R. 4. In the absence of the Vice-Chancellor, the members shall elect as Chairman the Dean of one of the Faculties to preside at the meeting.

R. 5. At all meetings of the Academic Council the Chairman shall have a vote and a casting vote.

R. 6. Notice of a motion or resolution to be included in the supplementary agenda of a meeting of the Academic Council must be in the hands of the Registrar not less than 14 clear days before the meeting.

R. 7. Notice of an amendment to a motion or resolution of which notice has been given must, if it is intended to be included in the supplementary agenda, be in the hands of the Registrar at least seven clear days before the meeting of the Academic Council at which the motion or resolution is to be moved.

R. 8. Notwithstanding anything contained in Regulations 6 and 7 above the Chairman may allow a motion or an amendment of which the notice required thereby has not been given.

R. 9. The procedure relating to conduct of business at a meeting of the Senate shall be applied, so far as may be, to the meetings of the Academic Council.

CHAPTER XI

THE FACULTIES (General)

Sec. 24. The University shall include the faculties of—

- (1) Arts,
- (2) Science,
- (3) Commerce,
- (4) Law,
- (5) Medicine and Pharmaceutics,
- (6) Engineering and Technology,
- (7) Oriental learning including Ayurved,
- (8) Education,
- (9) Agriculture and Forestry,
- (10) Women's Education,
- (11) Music and Fine Arts,

and such other faculties as may be prescribed by the Statutes.

Sec. 24A. (1) The faculties of Arts, Science and Commerce shall consist of the following:—

- (i) The Dean of the Faculty;
- (ii) University Professors and Readers in the subjects assigned to the Faculty;
- (iii) all heads of departments within the Faculty in the colleges affiliated upto the degree standard, provided they have at least 8 years' experience of teaching degree classes in a subject of the Faculty;
- (iv) members co-opted by the Faculty concerned from among teachers in affiliated colleges within the Faculty, the number of such members not to exceed five in the case of the Faculty of Arts and not to exceed two in the case of each of the Faculties of Science and Commerce;
- (v) members co-opted by the Faculty concerned from among persons who are not teachers in the University or in any of its affiliated colleges, the number of such members not to exceed five in the case of the Faculty of Arts and not to exceed three in the case of each of the Faculties of Science and Commerce, and

- (vi) the Conveners of the Boards of Studies in the Faculty, who are not otherwise included under the foregoing clauses.

(2) The Faculties of Engineering and Technology, of Medicine and Pharmaceutics and Education shall consist of the following:—

- (i) the Dean of the Faculty;
- (ii) University Professors and Readers in the subjects assigned to each Faculty;
- (iii) Heads of departments within each Faculty in degree colleges, and
- (iv) three persons not being teachers within the Faculty to be co-opted by the Faculty concerned.

(3) The Faculty of Law shall consist of the following:—

- (i) the Dean of the Faculty;
- (n) University Professors and Readers in the subjects assigned to the Faculty;
- (iii) Principals of separate colleges of Law;
- (iv) the Head of the Department of Law being a whole-time teacher of Law from each college which is not a separate Law College;
- (v) two teachers of Law in the University to be co-opted by the Faculty; and
- (vi) three persons not being teachers in the University or any of its affiliated colleges to be co-opted by the Faculty.

(4) The composition of other Faculties shall be prescribed by the Statutes.

(5) The members of a Faculty, other than ex-officio members, shall hold office for a period of 3 years.

Deans of Faculties.

Sec. 24 B. (1) There shall be a Dean of each Faculty who shall be

appointed by the Vice-Chancellor in the following order of preference, namely:—

(a) For the Faculty of Arts, Science and Commerce:—

- (i) University Professors or Principals of post-graduate colleges and Principals of degree colleges who have held the office of the Principal of a post-graduate college for at least five years, to be appointed alternately so far as persons in the two categories are available;
- (ii) University Readers in subjects in which there are no University Professors;
- (iii) Principals of degree colleges; and
- (iv) Heads of post-graduate departments.

*Note:—*The Principal or the teacher to be appointed as Dean must profess a subject included in the Faculty concerned.

(b) For the Faculty of Law: —

- (i) University Professors of law or Principals of Law colleges to be appointed alternately so far as persons in the two categories are available;
- (ii) University Readers in Law in case there is no University Professors;
- (iii) Heads of the Department of Law, being whole-time teachers of Law, in affiliated colleges, which are not separate law colleges, not below the rank of Professors.

(c) For the Faculties of Engineering and Technology, Medicine and Pharmaceutics and Education:—

- (i) Principals of colleges in the Faculty concerned;
- (ii) Heads of departments of subjects in the Faculty concerned.

*(d) For other Faculties.—*The qualifications and conditions of eligibility of the Deans of other Faculties shall be prescribed by the Statutes.

- (2) The Dean shall hold office for a term of three years and no person shall be eligible for re-appointment as Dean, until a period of at least six years has elapsed after the expiry of his last term.

Functions of Deans of Faculties.

Sec. 24C. (1) The Dean of a Faculty shall be responsible for the due observance of the Statutes, Ordinances and Regulations relating to that Faculty.

(2) The Dean shall preside at the meetings of the Faculty and shall record its proceedings.

(3) The Dean shall have the right to be present and speak at the meetings of the Boards of Studies relating to his Faculty but not to vote thereat unless he is a member thereof.

Functions of the Faculties—

Sec. 24D. Each Faculty shall exercise the following functions, namely:—

- (a) to recommend to the Academic council courses of study and curricula and schemes of examinations, after consulting the Boards of Studies;
- (b) to recommend to the Syndicate through the Academic Council what Boards of Studies should be instituted and the strength of such Boards, and to constitute them as provided in section 24 E;
- (c) to recommend to the Academic Council conditions for the award of degrees and other academic distinctions;
- (d) to co-ordinate work in the subjects assigned to the Faculty.
- (e) to organise research or to secure co-ordination therein when desirable.
- (f) to deal with any matter referred to it by the Academic Council or the Syndicate;
- (g) to remit matters to Boards of Studies;
- (h) to consider any matter within its purview referred to it by a Board of Studies;

- (i) to hold meetings with the sanction of the Vice-Chancellor jointly with any other Faculty or Faculties, such joint meetings to be convened by the Vice-Chancellor and to be presided over by him or by a Dean nominated by him; and
- (j) to discharge such other functions as may be prescribed by the Statutes.

S. 13. Meetings of the Faculties shall be held when convened by the Dean or by the Registrar on his behalf. Half the members shall constitute a quorum.

Rules for the conduct of the meetings of the Faculties.

1. The Dean shall preside at the meetings of the Faculty. In the absence of the Dean the members present shall select their own Chairman.
 2. Meetings of the Faculties shall be held ordinarily once a year in October vacation. The meeting held in this vacation shall be called the annual meeting.
 3. Half the members shall constitute a quorum.
 4. The Registrar shall, not less than 15 days previous to each meeting of the Faculty, issue to each member a notice stating the time and place of the meeting along with the agenda paper.
 5. Notice of a motion or resolution to be included in the supplementary agenda of a meeting of the Faculty must be in the hands of the Registrar not less than 7 days before the date of the meeting.
 6. Amendments to motions on the agenda and new proposals also can be moved at the meeting with the permission of the Chairman.
 7. The Chairman at the meeting of a Faculty may, at his discretion, adopt the procedure prescribed for discussion of matters at meetings of the Senate, so far as he may think fit.
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Election of members of the various University bodies.

O. 40. In all cases where elections are held at a meeting of any of the authorities, except in cases of casual vacancies, the notice of the meeting

at which the election is to be held shall be sent to the members at least 30 clear days before the date of the meeting. Nominations shall be sent to the Registrar so as to reach him at least 15 clear days before the day of the meeting, and the Registrar shall send a list of such nominations to the members of the authority concerned at least 8 clear days before the day of the meeting.

O. 41. Each nomination shall be in writing, and shall be dated and signed by two members of the authority.

O. 42. No person shall be nominated as a candidate for election unless he signifies his consent on the nomination paper.

O. 43. A candidate thus nominated for election may withdraw his candidature at any time before the poll is taken at the meeting, either personally or by writing a letter addressed and sent to the Registrar so as to reach him before the hour fixed for the meeting.

O. 44. If the number of candidates nominated exceeds the number of vacancies to be filled, a poll shall be taken at the meeting and the election shall be by the method of single transferable vote (as given in the case of Registered Graduates elections). Ballot papers with the names of persons nominated printed thereon will be furnished at the meetings held for the purpose of making the election. All the members present at the meeting shall be entitled to vote in the election. When two or more authorities of bodies are jointly entitled to elect a representative, and the election takes place at a meeting, a member who is common to two or more authorities or bodies shall be entitled to only one vote. The Vice-Chancellor in the case of elections by the Senate, the Syndicate and the Academic Council, and the Deans in case of election by Faculties shall determine the time during which the ballot-box shall be kept open for the receipt of ballot papers and this time-limit shall be notified to the voters in the notice of election. The scrutiny shall be conducted by the Registrar and not less than two scrutineers to be selected by the Chairman of the meeting from among those present at the meeting.

CHAPTER XII

THE FACULTY OF ARTS

O. 45. The following shall be the subjects and degrees assigned to the Faculty.

Subjects—(1) English.

(2) Philosophy.

- (3) History.
- (4) Archaeology.
- (5) Economics. (Jointly with Faculty of Science)
- (6) Sociology.
- (7) Sanskrit.
- (8) Persian.
- (9) Arabic.
- (10) Modern European Languages.
- (11) Modern Indian Languages (Hindi, Urdu).
- (12) Oriental and European Classical Languages.
- (13) Geography. (Jointly with Faculty of Science)
- (14) Indian Music.
- (15) Drawing and Painting.
- (16) Home Science.
- (17) Teaching.
- (18) Mathematics. (Jointly with Faculty of Science)
- (19) Military Science.
- (20) Political Science.

- Degrees*—(1) Bachelor of Arts pass (B. A. pass).
(2) Bachelor of Arts honours (B. A. Honours).
(3) Master of Arts (M. A.)
(4) Doctor of Philosophy (Ph. D.)
(5) Doctor of Literature (D. Litt.)

CHAPTER XIII

THE FACULTY OF SCIENCE

O. 46. The following shall be the subjects and degrees assigned to the Faculty.

- Subjects*—(1) Physics.
(2) Chemistry.
(3) Mathematics. (Jointly with Faculty of Arts)
(4) Botany.
(5) Zoology.
(6) Geology.

- (7) Military Science.
- (8) Home Science.
- (9) Geography. (Jointly with Faculty of Arts)
- (10) Economics. (Jointly with Faculty of Arts)
- (11) Agriculture.

Degrees—(1) Bachelor of Science pass (B. Sc. pass)
(2) Bachelor of Science honours (B. Sc. Honours)
(3) Bachelor of Science (in Agriculture) (B. Sc. Ag.)
(4) Master of Science (M. Sc.)
(5) Doctor of Philosophy (Ph. D.)
(6) Doctor of Science (D. Sc.)

CHAPTER XIV THE FACULTY OF COMMERCE

O. 47. The following shall be the subjects and degrees assigned to the Faculty.

- Subjects*—(1) Commercial and General English.
(2) Business Organisation.
(3) Commercial and Industrial Law.
(4) Statistics.
(5) Principles of Economics.
(6) Currency and Finance.
(7) Modern Economic Development of India and England.
(8) Advanced Accountancy and Auditing.
(9) Advanced Banking.
(10) Geography.
(11) Insurance.
(12) Rural Economics.
(13) Secretarial Practice.
(14) Actuarial Mathematics.
(15) Corporation Finance.
(16) Organisation of Industries.
(17) Organisation of Markets.
(18) Banking and Foreign Exchange.

- (19) International Trade and Fiscal Policy.
- (20) Transport.
- (21) Law and Practice of Income-Tax.
- (22) Company Accountancy.
- (23) Principles and Practice of Auditing.
- (24) Secretarial Work.
- (25) Labour Problems.
- (26) Co-operation.
- (27) Public Finance.
- (28) Stock Exchanges.

Degrees—(1) Bachelor of Commerce (B. Com.)
(2) Master of Commerce (M. Com.)
(3) Doctor of Philosophy (Ph. D.)

CHAPTER XV

THE FACULTY OF LAW

O. 48. The following shall be the subjects and degrees assigned to the Faculty.

- Subjects*—(1) Substantive Private Law in force in India, Law of Contracts, Transfer of Property, Trusts, Specific Relief, Torts and Easements, Hindu Law, Mohamadan Law and Company Law.
- (2) Adjective Private Law in force in India, Law of Evidence, Civil Procedure and Limitation.
- (3) Public Law of India. Constitutional Law, Revenue Law, Income-Tax Law, Criminal Law and Procedure.
- (4) Legal Theory.
Principles of English Common Law, and Equity, Jurisprudence and Principles of Legislation, International Law and Conflict of Law.

Degrees—(1) Bachelor of Laws (LL. B.)
(2) Master of Laws (LL. M.)
(3) Doctor of Laws (LL. D.)

CHAPTER XVI

THE FACULTY OF ENGINEERING AND TECHNOLOGY

O. 49. The following shall be the subjects and degrees assigned to the Faculty:—

- Subjects*—(1) Mathematics.
(2) Applied Chemistry.
(3) Applied Physics.
(4) Applied Mechanics & Graphic Statics.
(5) Strength of Materials and theory of Structure.
(6) Theory of Mechanics.
(7) Surveying.
(8) Building Materials & Construction.
(9) Heat Engines.
(10) Hydraulics and Water Power Engineering.
(11) Mechanical Engineering—Drawing & Designation.
(12) Electrical Engineering—Generation, transmission and utilisation of Electric Power.
(13) Electrical Communication Engineering.
(14) Electrical Machinery—Drawing & Designation.
(15) Workshop Technology and Engineering Production.
(16) Industrial Organisation and Workshop Management.

Degree—Bachelor of Engineering (B. E.)

CHAPTER XVII

THE FACULTY OF MEDICINE AND PHARMACEUTICS

O. 50. The following shall be the subjects and degrees assigned to the Faculty.

- Subjects (Medicine)*—(1) Anatomy.
(2) Physiology and Biochemistry.
(3) Pharmacology and Materia Medica.
(4) Pathology and Bacteriology.
(5) Hygiene and Public Health.

- (6) Jurisprudence.
- (7) Medicine.
- (8) Surgery.
- (9) Obstetrics and Gynaecology.
- (10) Ophthalmology.

Subjects (Pharmacy)—(1) Pharmaceutical Chemistry

- (a) Inorganic
- (b) Analytical
- (c) Organic.
- (d) Physical.
- (e) Bio-Chemistry.

(2) Pharmacy and Pharmaceutical Technology.

- (a) General Pharmacy.
- (b) Dispensing & Forensic.
- (c) Microbiology.

(3) Pharmacognosy and Biology.

(4) Industrial Chemistry.

- (a) Perfumes and Cosmetics.
- (b) Food and Water Analysis.

(5) Anatomy, Physiology, Pharmacology, Toxicology
- Hygiene and first Aid.

(6) Pharmaceutical Economics.

- (a) Economics and Sales promotion.
- (b) Accounting and Business administration.

(7) Mathematics and Practical Physics.

(8) Foreign languages.

- (a) English.
- (b) French.
- (c) German.

Degrees—Bachelor of Medicine and Bachelor of Surgery (M.B., B.S.)
Bachelor of Pharmacy (B. Pharm.)

CHAPTER XVIII

FACULTY OF EDUCATION

O. 51. The following shall be the subjects and degrees assigned to the Faculty;—

Subjects—(1) Principles of Education.

(2) Educational Psychology and Measurements.

(3) (a) History of Education;
(b) Comparative Education.

(4) (a) Methods of teaching.
(b) School Organisation & Hygiene.
(c) Educational Administration.

(5) (a) Rural Education.
(b) Educational Sociology.
(c) Physical Education.

Degrees—Bachelor of Education (B. Ed)
Master of Education (M. Ed.)

CHAPTER XIX

THE BOARDS OF STUDIES

Sec. 24E. (1) There shall be a Board of Studies for each subject or group of subjects. The number of the Boards of Studies in each Faculty as also the number of members of each Board shall be determined by the Syndicate on the recommendation of the Academic Council and the Faculty concerned.

(2) The Boards of Studies shall be constituted by the Faculty concerned for a period of three years.

(3) In the Faculties of Arts, Science, Commerce and Law, the members of a Board shall not exceed—

(a) seven in the case of a Board dealing upto post-graduate studies; and

(b) five in other cases.

(4) The Faculties of Engineering and Technology and of Medicine and Pharmaceutics and Education shall have one Board each. The number of members in the Board of Studies relating to the Faculty of Education shall not exceed five and in each of other two Boards, eleven.

(5) A Board when dealing with a subject or subjects for High School Education shall co-opt a member, who shall be Headmaster of a High School of not less than ten years' teaching experience in the subject.

Provided that in calculating the maximum number of members prescribed for a Board by sub-section (3) the number co-opted under this sub-section shall not be counted.

(6) There shall be at least one and not more than two external members on each Board consisting of five or less than five members and at least two and not more than three external members on each Board consisting of more than five members.

(7) In the case of a Board dealing upto post-graduate studies, there shall be at least three internal members who shall be heads of post-graduate departments, or postgraduate teachers to the extent the number of such heads is less than three in the University or in affiliated colleges or approved institutions.

(8) Each Board shall have a convener appointed by itself in the following order of preference from among its internal members, namely:—

(i) University Professors;

(ii) Principals of post-graduate colleges, being heads of departments or Principals of degree colleges who have held the office of the Principal of a postgraduate college and head of a department for at least five years;

(iii) University Readers in subjects in which there is no University Professor;

- (iv) Principals of degree colleges being heads of departments;
- (v) Heads of post-graduate departments in colleges;
- (vi) Heads of degree departments in colleges;
- (vii) other heads of departments for subjects taught only upto the Intermediate standard.

Explanation.—"Internal member" means a member who is a teacher in the University, in an affiliated college, a recognised high school or an approved institution; and "external member" means one who is not an internal member.

Sec. 24F.(1) The Boards of Studies shall recommend courses of study and curricula in their respective subjects and shall advise on all matters relating thereto referred to them by the Syndicate or the Academic Council or the Faculty concerned.

(2) A Board of Studies may bring to the notice of the Academic Council or the Syndicate matters connected with examinations in its subject or subjects and may also address the Faculty concerned on any matters connected with the improvement of the courses therein.

(3) Any two Boards of Studies may, with the consent of the Vice-Chancellor, and shall at the request of the Academic Council or the Syndicate, jointly meet and act in concurrence and render a joint report upon any matter which lies within the province of both. In such cases the joint meeting shall elect its own chairman from among the two conveners. The quorum of a joint meeting of the Board must include a full quorum of each Board represented, no member present being counted on more than one separate quorum.

(4) The Boards of Studies shall prepare panels of examiners in their respective subjects in accordance with the Statutes.

S. 25 (2) (a) Each Board of Studies shall prepare a panel consisting of—

- (i) all qualified internal examiners, and
- (ii) as many external examiners as may be needed for conducting examinations of the University for a period

of five years, in each subject for each examination upto and inclusive of the examination for Master's degree. The Committee for the selection of examiners shall select examiners in rotation from out of the panel and no examiner outside the panel shall be appointed unless and until a person within the panel is not available or cannot be appointed in accordance with the provisions hereinafter contained.

- (b) The panels shall ordinarily be revised once in five years and such of the persons in the previous panels as have not got a chance of acting as examiners during the last quinquennium shall be given preference over others in the revised panels.
- (c) This Sub-Statute shall not apply to examiners for a doctor's degree.

Sec. 42. *Books written by a member of the Board of Studies not to be prescribed*—No book written or published by any person who is the member of a Board of Studies of the University shall be prescribed or recommended for study for any examination of the University so long as such person remains a member of the Board.

Sec. 43. *Books prescribed or recommended not to be changed:—*
No book prescribed or recommended for any examination of the University shall ordinarily be changed before a period of five years.

Faculty of Arts

O. 52. There shall be boards of studies in the following subjects of the Faculty:—

- (1) English.
- (2) Philosophy and Logic.
- (3) History and Archaeology.
- (4) Political Science and Civics.
- (5) Economics.
- (6) Sanskrit.
- (7) Hindi.
- (8) Urdu.
- (9) Persian and Arabic.

Faculty of Science

O. 53. There shall be Boards of studies in the following subjects of the Faculty:—

- (1) Physics.
- (2) Chemistry.
- (3) Botany.
- (4) Zoology.
- (5) Mathematics.
- (6) Geology & Geography.
- (7) Agriculture.

Faculty of Commerce

O. 54. There shall be three boards of studies in the Faculty viz;

- (1) Board of Studies in Commerce (Theory).
- (2) " " " " " (Practice)
- (3) " " " " " (Allied Subjects).

O. 55. The distribution of subjects among the three boards shall be as follows—

- (1) Board of Studies in Commerce (Theory)

Intermediate in Commerce—

- (1) Economics and Geography.
- (2) Banking.
- (3) Industrial Organisation.

B. Com.—

- (1) Economics Group.
- (2) Advanced Banking.
- (3) Rural Economics.
- (4) Co-operation.
- (5) Geography.

M. Com.—

- (1) International Trade.
- (2) Banking.
- (3) Transport.
- (4) Labour Problems.
- (5) Rural Economics.

- (6) Public Finance.
- (7) Co-operation.
- (8) Geography.

2. Board of Studies in Commerce (Practice)

Intermediate in Commerce—

- (1) Book-keeping and Accountancy.
- (2) Business Methods.
- (3) Salesmanship and Advertising.

B. Com.—

- (1) Commerce Group.
- (2) Advance Accountancy.
- (3) Secretarial Work.

M. Com.—

- (1) Corporation Finance.
- (2) Industries.
- (3) Marketing.
- (4) Income Tax.
- (5) Company Accountancy.
- (6) Auditing.
- (7) Secretarial Work.
- (8) Statistics.
- (9) Stock Exchanges.

3. Board of Studies in Commerce (Allied Subjects)

Intermediate in Commerce—

- (1) English.
- (2) Steno-typing.
- (3) Mathematics.

B. Com.—

- (1) English.
- (2) Insurance.
- (3) Actuarial Mathematics.

M. Com.—

- (1) Insurance.

Faculty of Law

O. 56. There shall be only one Board of Studies in Law consisting of 7 members.

Faculty of Engineering & Technology

O. 57. There shall be only one Board of Studies in Engineering and Technology consisting of 11 members.

Faculty of Medicine & Pharmaceutics

O. 58. There shall be only one Board of Studies in Medicine and Pharmaceutics consisting of 11 members.

Faculty of Education

O. 59. There shall be only one Board of Studies in Education consisting of 5 members.

General

O. 60. The majority of the members of a Board shall form a quorum.

O. 61. A Board may dispose of its business by meetings or by correspondence or by both.

O. 62. The Registrar shall forward to the Conveners of Boards of Studies copies of books received from publishers.

O. 63. The Registrar may, so far as possible, procure for the use of any Board, books and periodicals which the Board may require. He shall print any notes and minutes which a Board required to be printed, and pay to the Convener of the Board any expenses incurred by him in circulating books to its members:

Provided that the Registrar, in any case in which he considers it expedient, may take the orders of the Vice-Chancellor before performing any of the duties prescribed.

O. 64. Procedure for submission of books by the publishers or authors of books for consideration of the Boards of Studies:—

1. The new books meant for consideration by the Boards of Studies in the University should be submitted so as to reach the office of the Registrar, University of Rajputana, not later than August 15, each year.
2. Publishers and authors should be requested to submit eight

copies (or more, if required) of each book meant for consideration. On the reverse of the title page of each copy a slip of paper should be pasted securely containing the following particulars:—

1. Name of book.
 2. Name of authors.
 3. Name of the publishers.
 4. Name of the subject.
 5. Name of examination for which intended.
 6. Purpose (whether submitted as a text-book or supplementary reading or for library).
 7. Price.
 8. Number of pages.
 9. Whether the book was submitted before and if so, when?
 10. Date.
3. The words 'specimen', (year), should be stamped boldly on the first page of each book and on several other pages inside the book.
 4. All books should be sent prepaid.
 5. Separate forwarding letters should be sent for books relating to each subject.

CHAPTER XX

AFFILIATION OF COLLEGES

Sec. 4. The University shall have the following powers, namely:—

- (4A) to admit colleges, high schools and institutions to the privileges of the University and to withdraw such privileges.
- (7) to inspect affiliated colleges, recognised schools and approved institutions and to take measures to ensure that proper standard of teaching, instruction and training are maintained in them.

Sec. 5. The powers of the University conferred by or under this Act shall extend throughout those States of Rajputana which contain

colleges or high schools recognised by the University and, in accordance with arrangements which may be made, throughout Ajmer-Merwara. No educational institution beyond these limits shall be associated with or admitted to any privileges of the University.

Sec. 22. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following functions, namely:—

- (i) subject to the statutes, to inspect and to affiliate, recognise or approve colleges, schools and hostels or institutions, and to withdraw affiliation, recognition or approval from them.

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

- (7) inspection and recognition, affiliation or approval of high schools and hostels, colleges, and institutions.

Sec. 29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

- (8) rules to be observed and enforced by affiliated colleges and recognised high schools in respect of transfer of students.

Sec. 32. The affiliated colleges shall be such as may, after the commencement of this Act, be recognised by the Syndicate in accordance with this Act and the Statutes, but shall include all colleges recognised at the commencement of this Act as colleges of the University so long as such recognition continues.

Sec. 33. The affiliated colleges will be open, on equal terms, to students from all States represented on the Senate.

S. 26 (1) Every affiliated college shall be a public educational institution.

(2) The whole of the funds of an affiliated college shall be applied to its own educational purposes, and in the case of a college not maintained by a Government shall be fully controlled by a regularly constituted governing body, which shall include the Principal and at least

one other member of the teaching staff. The rules relating to the constitution of the governing body shall be such as will ensure the proper management of the college.

(3) Any change in the constitution of the governing body shall be reported forthwith to the Syndicate.

(4) The Principal of a college shall be responsible for the internal administration of the college.

(5) Every college shall have a duly constituted College Council properly representative of the teaching staff, to advise the Principal in the administration of the college.

(6) Every college not maintained by a Government shall satisfy the Syndicate that adequate financial provision is available for its efficient maintenance, either in the form of an endowment or by an undertaking given by the person or body maintaining it; and that the college is established on a permanent basis.

(7) Every college shall maintain such registers and records as may be prescribed by the Ordinances and furnish such statistical and other information as the University may from time to time specify.

(8) Every college shall submit each year by a date to be fixed by the Syndicate a report on the working of the college during the previous year, giving the particulars and the circumstances of any change in the staff or the management, the number of students, and a statement of income and expenditure and such other information as may be required.

S. 27. Every college shall provide instruction in such subjects and in preparation for such examination as may be authorised in respect of that college, from time to time, by the Syndicate.

S. 28. Every college shall satisfy the University that it maintains a satisfactory standard of educational efficiency for the purposes for which recognition is enjoyed or sought, in respect of instruction, internal examinations and promotion, and tutorial guidance of students, and all other matters.

S. 29. Every college shall satisfy the University that it is in all respects suitably organised and conducted.

S. 30. (1) Every college shall satisfy the University that the number and qualifications of its teaching staff in each subject are adequate, and in accordance with the rules prescribed by the University, and that their emoluments and the conditions of their service are such as may be approved by the University.

O. 65. The following shall be the minimum qualifications for teachers of various stages of University education:—

- (a) For teachers of Intermediate and Degree classes in Arts and Science:—

At least a second class M.A. or M. Sc. in the subject concerned.

- (b) For teachers of Commerce in Intermediate and Degree classes:—

At least a second class Master's Degree in the subject, or a second class M. A. in Economics with a second class B. Com.

- (c) For teachers of honours and post-graduate classes:—

A first class M. A., M. Sc. or M. Com., or second class M. A., M. Sc. or M. Com., with three years experience of teaching degree classes.

- (d) Heads of departments must have had at least three years teaching experience of degree classes, or five years experience of teaching intermediate classes in a college.

- (e) For teachers of law:—

- (i) Professor or head of department—LL. M., or LL. B. (first class), or Bar-at Law with a degree in Arts or Science, with at least 5 years practice at the Bar and a satisfactory teaching experience.
- (ii) Other full time posts—LL. M., or LL. B. (first class), with at least 3 years practice at the Bar.
- (iii) Part-time lecturers—LL. M., or LL. B., with at least 7 years practice at the Bar.

N.B.—1. Experience of teaching classes in Arts and Science is included

2. In exceptional cases the condition of first class may be relaxed.

- (f) For teachers in the Faculty of Education:—

The same qualifications as are prescribed for intermediate and degree classes and post-graduate classes in Arts and Science plus at least a second class B. T., or B. Ed., or L. T.

- (g) For teachers of Drawing in Intermediate classes:—

- (a) Diploma in Fine Arts of Maharaja's School of Arts and Crafts, Jaipur.
- (b) Diploma in Fine Arts of Government School of Arts, Calcutta.

- (c) Diploma in Fine Arts of Government School of Arts, Lucknow.
- (d) Diploma in Fine Arts of J. J. School of Arts, Bombay.
- (e) Diploma in Fine Arts of Government School of Arts, Madras.
- (f) Diploma in Fine Arts of Shantiniketan (Bengal).
- (g) (a) Teachers Artist Certificate of the Royal Drawing Society, London, or (b) the Intermediate grade Drawing Examination of Bombay with 8 years teaching experience in the high school classes
- (h) B. A. with Drawing as an optional subject.
- (h) For teachers of Drawing in B. A. classes:—
The same qualifications as prescribed for intermediate class, with five years teaching experience in the intermediate classes.
- (i) For teachers of Pharmacy and allied and cognate subjects:—
A teacher in Pharmaceutical, allied and cognate subjects shall hold a professional 1st class Degree in Pharmacy or a second class Degree in Pharmacy with at least three years teaching, practical, or research experience, or a post-graduate degree in Science or in the subject taught by him.

These qualifications do not apply to persons who are already in service and who at the time of their appointment satisfied the conditions with regard to minimum qualifications laid down by the Agra University or Ajmer Board as the case may be.

A person who is a third class M.A., M. Sc., or M. Com., but has taken a Ph. D. degree will be regarded as fulfilling the minimum qualifications of a first or second class post-graduate degree.

Sec. 22. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate shall exercise the following powers and perform the following functions, namely:—

- (1) to recommend minimum scales of salaries of teachers in colleges and of those teaching the IX and X classes in high schools.

O. 66. The following are recommended as the minimum scales of

emoluments for teachers in affiliated colleges:—

1. Principal of a post-graduate college—
Rs. 600-40-800.
if the number of students in the college is less than 750.
Rs. 800-40-1000.
if the number of students is 750 or more.
2. Principal of a degree college—
Rs. 400-25-650.
if the number of students in the college is less than 500.
Rs. 600-40-800.
if it is 500 or more.
3. Principal of an Intermediate college—
Rs. 300-20-500.
if the number of students in the college (classes IX, X, XI and XII) is less than 500.
Rs. 400-25-600.
if it is 500 or more.
4. Heads of departments of post-graduate classes or heads of departments in charge of degree classes of at least five years standing as such—
Rs. 300-20-500-E. B.-600.
5. Heads of departments in degree classes having less than five years standing—
Rs. 250-15-400.
6. Lecturers in post-graduate and degree classes—
Rs. 200-10-300-E. B.-10-400.
7. Lecturers in intermediate colleges—
Rs. 200-10-300.
8. Physical Instructors (who are graduates and possess a diploma in Physical Education)—
Rs. 200-10-300.
9. Librarians (who are graduates and possess a diploma in Librarianship)—
Rs. 200-10-300.
10. No full time member of the teaching staff of an intermediate or degree college shall be given a salary of less than Rs. 200 per month.

S. 30. (2) Every college shall maintain a proportion of teachers to

students which is not smaller than a minimum to be prescribed by Ordinance and which is sufficient for thorough tutorial supervision.

(3) The staff of a College for Women shall, as far as possible, be composed of women.

(4) Every teacher in a college not maintained by a Government shall be employed under a written contract stating the conditions of his service and the salary to be paid to him; and a copy of this contract shall be given to the teacher and a copy shall be lodged with the University.

(5) Any difference or dispute of any kind whatsoever arising out of a contract between an affiliated college not maintained by a Government and a member of its teaching staff including the principal shall be referred to arbitration and determined on the lines of the provisions of the Indian Arbitration Act, 1940. Such arbitration shall be held by two persons not associated with the college concerned, one to be chosen by each party in difference; and in case of their non-agreement, the Vice-Chancellor or his nominee shall act as the Umpire. The decision of the arbitrators or of the Umpire, as the case may be, shall be final. An award given in favour of the teacher in such an arbitration shall be a condition precedent to any right of action against the college in respect of such difference or dispute :

Provided that this clause shall not apply in the case of a dispute arising in connection with the termination of the services of either the principal or any member of the teaching staff of an affiliated college who is on probation or on a temporary basis.

O. 67. All members of the staff of the colleges, other than those maintained by a State, shall be appointed on a written contract. The contract shall embody the following points besides such other points as each individual college may think fit to include in its own form of agreement:—

(1) Salary and grade shall be definitely stated.

(2) Age of superannuation should be 60 years.

(3) The whole-time service of the members of the staff shall be at the disposal of the college. For other activities special permission must be obtained.

(4) The grounds on which service can be terminated shall be only the following—

(a) Wilful neglect of duty,

(b) Misconduct,

(c) Breach of any of the terms of contract,

(d) Physical or mental unfitness, or

(e) Incompetence, provided that this plea shall not be used after 5 years' service.

(5) Except in case of 4 (a), (b) and (c), there shall be three months' notice on either side of termination of the contract, or in lieu of such notice a payment of thrice the monthly salary then being earned by the teacher.

(6) Any difference or dispute of any kind whatsoever arising out of a contract between an affiliated college not maintained by a Government and a member of its teaching staff including the principal shall be referred to arbitration and determined on the lines of the provisions of the Indian Arbitration Act, 1940. Such arbitration shall be held by two persons not associated with the college concerned, one to be chosen by each party in difference; and in case of their non-agreement, the Vice-Chancellor or his nominee shall act as the Umpire. The decision of the arbitrators or of the Umpire, as the case may be, shall be final. An award given in favour of the teacher in such an arbitration shall be a condition precedent to any right of action against the college in respect of such difference or dispute:

Provided that this clause shall not apply in the case of a dispute arising in connection with the termination of the services of either the principal or any member of the teaching staff of an affiliated college who is on probation or on a temporary basis.

O. 68. The following form of agreement shall serve as a model. The form of agreement to be adopted by each college shall be approved by the Syndicate before it is put in force:—

Agreement made this.....day of.....19.....
between.....of the first part and the Managing
Committee of.....College through the
Principal/Secretary of the second part:

Whereas the college has engaged the party of the first part to serve the college assubject to the conditions and upon the terms hereinafter contained, this agreement witnesseth that the party of the first part and the college hereby contract and agree as follows:—

1. That the engagement shall begin on the..... day of19..... and shall be determinable as hereinafter provided.

2. That the party of the first part is employed on probation for one year and shall be paid a monthly salary of Rs. in the grade of and will be entitled to the benefits of the Provident Fund, and leave, in accordance with the provisions and rules laid down by the college for the purpose. The period of probation may be exempted by such further period

as it may become necessary for the party of the second part to determine but in no case shall it exceed three years. Grade increments shall be given annually on confirmation.

3. That the age of superannuation will be 60 years. The actual time of retirement shall be the thirtieth day of June following attaining of that age.

4. That the party of the first part shall not engage in any trade, business, or other activity, which in the opinion of the principal may be prejudicial to his work in the college.

5. After confirmation, the services of the party of the first part can be terminated only on the following grounds:—

- (a) Wilful neglect of duty,
- (b) Misconduct,
- (c) Breach of any of the terms of contract,
- (d) Physical or mental unfitness, or
- (e) Incompetence, provided that this plea shall not be used after 5 years' service.

6. Except when termination of service has taken place under para 5 (a), (b) or (c), neither party shall terminate this agreement save by giving to the other party three months' notice in writing or by paying a sum equivalent to thrice the monthly salary then being earned by the party of the first part.

7. That any dispute arising out of this contract shall be referred to arbitration and determined on the lines of the provisions of the Indian Arbitration Act, 1940. Such arbitration shall be held by two persons not associated with the college, one to be chosen by each party in difference; and in case of their non-agreement, the Vice-Chancellor or his nominee shall act as the Umpire. The decision of the arbitrators or of the Umpire, as the case may be, shall be final. An award given in favour of the party of first part shall be a condition precedent to any right of action against the college in respect of such dispute.

Signed this.....day of.....19.....

(1)

(2)

In the presence of:—

(1)

(2)

S. 30. (6) Every college not maintained by a Government shall maintain a Provident Fund for the benefit of members of its teaching staff, with rules approved by the University.

(7) A teacher dismissed for misconduct by an affiliated college shall not be employed by any other affiliated college without the previous consent in writing of the Vice-Chancellor.

S. 31. Admission of students to a college shall be subject to the conditions prescribed by the Ordinances in this behalf.

S. 32. Every college shall conform to the University terms and vacations

S. 37 C. Minimum number of working days:—The total number of working days in an academic year, exclusive of examination days, shall not be less than—

(a) 180, in the case of degree colleges or post-graduate colleges; and

(b) 210, in the case of intermediate colleges and high schools.

O. 69. The University year for the Faculties of Arts, Science, Commerce, Law, Engineering, and Technology, Education and Medicine and Pharmaceutics shall be divided into two terms.

O. 70. The following is the normal arrangement of terms:—

Faculty	First term		Second term	
	Date of Commencement.	Date of Conclusion.	Date of Commencement.	Date of Conclusion.
Arts	About 15th July	About 15th Oct	About 16th Nov.	About 30th April
Science ..	"	"	"	"
Commerce ..	"	"	"	"
Law ...	"	"	"	"
Engineering & Technology ...	"	"	"	"
Education ...	"	"	"	"
Medicine & Pharmaceutics.	15th July	"	1st Nov.	7th May.

and shall generally be adopted by all recognised institutions.

Note—(i) The terms include the periods of examination.

(ii) There should be a break of at least 8 days at the end of December during the second term.

O. 71. The maximum amount of work to be done by teachers in an affiliated college shall be as follows:—

- (a) 15 periods per week for heads of post-graduate departments;
- (b) 18 periods for teachers doing post-graduate work;
- (c) 21 periods for the rest; and
- (d) 24 periods for teachers teaching intermediate classes only, subject to a maximum of 30 periods if a person is teaching high school classes also. 3 periods of high school be reckoned as equivalent to 2 periods of the intermediate.

In calculating the above, a period to be taken as 45 minutes and, except for Engineering, three tutorial or practical periods be reckoned as equivalent to two lecture periods.

O. 72. The number of students in a class, or section of a class, in an affiliated college shall not exceed 60 for purposes of lectures in the class rooms, provided that in the case of Law the number may go upto 75 with the previous permission of the Vice-Chancellor.

O. 73. Every college shall provide for tutorial instructions and necessary teaching staff be provided for this work.

- (1) Each tutorial group shall consist of not more than 12 students but preferably 6.
- (2) Each group shall be allotted at least one period a week for tutorial class.

O. 74. A college affiliated in any branch of experimental science shall have at least one teacher provided for every 20 students performing laboratory work at one and the same time in a science subject.

O. 75. Separate laboratories shall be provided in each branch of science and each of them shall be suitably and adequately equipped.

S. 33. In every college the fees charged shall be such as may be approved by the University.

S. 34. Every college shall satisfy the University that its buildings, furniture, laboratory and library equipment and all other equipments are satisfactory.

S. 35. Every college shall satisfy the University as to the adequacy of its library, and the suitability of the system of cataloguing and lending of books.

S. 36. (1) Every college shall satisfy the University that proper discipline is maintained in the college and the hostels

(2) Every college shall make adequate provision for the residence of its students not residing with their parents or recognised guardians, and shall provide adequate facilities for the physical exercise and health of its students; and shall employ an efficient system of medical examination and care. Residence in colleges or their hostels shall be governed by rules approved by the University.

(3) Every college and its hostels shall be subject to inspection, in regard to health and residence, on behalf of the Health and Residence Board or of the Syndicate

(4) Every college to which women students as well as men are admitted shall provide a separate retiring room and other necessary conveniences for women students.

CHAPTER XXI

THE BOARD OF INSPECTION and Inspection of Affiliated Colleges, Approved Institutions and High Schools.

Sec. 24 1. The Board of Inspection shall consist of the following, namely:—

- (i) the Vice-Chancellor;
- (ii) the Director of Education in Rajasthan; and
- (iii) the Deans of Faculties.

Sec. 24 J (1) The Board shall deal with applications for affiliation, recognition or approval of colleges, schools and institutions within the territorial jurisdiction of the University, arrange for their inspection in the manner prescribed by the Statutes, and make recommendations

to the Syndicate in regard to their affiliation, recognition or approval, as the case may be.

- (2) The Board shall appoint three committees consisting of five members each, one to deal with applications for affiliation of colleges, another to deal with applications for recognition of schools and the third to deal with applications for approval of institutions. The committees shall be appointed for a period of three years.
- (3) Subject to approval by the Syndicate, the Board may make rules for the approval, recognition and affiliation of institutions, schools and colleges, provided that such rules relating to high schools shall not be made until the Board of High School Education has first been consulted.

O. 76. The Board of Inspection shall meet whenever the Vice-Chancellor directs.

O. 77. The quorum at a meeting of the Board of Inspection shall be four.

Sec. 4. The University shall have the following powers, namely:-

- (4A) to admit colleges, high schools and institutions to the privileges of the University and to withdraw such privileges.
- (7) to inspect affiliated colleges, recognised schools and approved institutions and to take measures to ensure that proper standards of teaching, instruction and training are maintained in them.

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

- (7) inspection and recognition, affiliation or approval of high schools and hostels, colleges, and institutions.

S.37. (1) A college applying for recognition, whether for the first time or in additional subjects or for additional courses of study, shall make written application to the Registrar not later than the 15th October preceding the academic year from which the recognition sought is to take effect. With the application shall be given such information as is desired by the University.

(2) An application for recognition may be withdrawn at any time before recognition is granted.

(3) Recognition shall in no case be granted with retrospective effect.

(4) The Syndicate shall provide for the periodical inspection of each college, and may cause an inspection to be made at any time.

(5) The Syndicate shall have power to cause an enquiry to be made in respect of any matter connected with a college. In every case notice shall be given to the management of the college of the intention to cause an enquiry to be made and the management shall be entitled to be represented thereat.

(6) The Syndicate may, as the result of inspection or enquiry made under the foregoing clauses (4) and (5), advise the college concerned on any matter, or direct the college to take such action as may be specified, and the college shall take such action as directed within such period as may be fixed.

(7) The Syndicate shall have power, at any time after due enquiry, to withdraw the recognition granted to a college which is not conducted in accordance with the conditions prescribed by the Statutes and Ordinances or imposed by the Syndicate at the date of recognition or at any later date. The Syndicate shall give the college an opportunity of appearing at any such enquiry and of making representations on its own behalf, and shall record its opinion on any representation so made.

(8) The Syndicate shall have power, after inspection, to withdraw recognition in respect of any subject or course of study.

O. 78. Subject to the provisions of the Act, the Statutes and the Ordinances, the Board of Inspection shall make arrangements for the periodical inspection of affiliated colleges and shall report to the Syndicate.

O. 79 The Board of Inspection shall provide that each affiliated college shall be inspected once within the period of five years after the grant to it of the privileges of affiliation or after the general inspection last held.

O. 80 Each college shall pay a fee of Rs. 200/- for the inspection of each subject or subjects, subject to a maximum of Rs. 300/-, provided that the application for affiliation in more than one subject is made at one time. If the same is not accompanied by the fee, the application shall be treated as invalid for the purpose of applying for affiliation in a subject.

for post-graduate studies shall be treated to have applied for an examination and shall have to remit a fee of Rs. 300/- for each subject in which post-graduate classes are proposed to be opened, subject to a maximum of Rs. 500/-.

The above fees shall also be remitted with applications for permanent affiliation.

S. 34 A. (1) For the inspection of High Schools, Colleges and Institutions, the Board of Inspection shall appoint Inspectors from a panel which shall be constituted by the Board and ordinarily revised once in five years. The panel shall consist of the following, namely:—

(a) *For High Schools.*—

- (i) Principals of degree colleges including post-graduate colleges;
- (ii) Principals of Intermediate colleges of not less than 5 years' standing;
- (iii) Inspecting officers of the Education Department of the Government not below the rank of Divisional Inspector.

(b) *For intermediate and degree colleges, other than post-graduate colleges.*—

- (i) University Professors and Readers;
- (ii) Principals of degree and post-graduate colleges.

(c) *For post-graduate colleges:*—

- (i) Professors of the University or of any recognised Indian University;
- (ii) Principals of post-graduate colleges affiliated to the University or to any recognised Indian University.

(d) *For institutions.*—The panels for High Schools and Colleges shall also apply to institutions of equal status.

(2) The number of Inspectors to be sent out by the Board of Inspection shall be limited as follows. —

(a) *High Schools.*—

- (i) *For new recognition.*—Two persons, one of whom shall be the Inspector of the Division concerned, provided that, for Government schools another person shall be appointed in place of the Inspector;

- (n) *For recognition in additional subjects.*—One person only.
- (b) *Intermediate and degree colleges.*—
 - (i) *For new affiliation*—One person for each Faculty but not less than two in any case;
 - (u) *For affiliation in additional subjects.*—One person for each Faculty.
- (c) *For affiliation in post-graduate subjects.*—One for each subject.
- (d) *For approval of institutions.*—Two persons or in case of Research institutions two persons for each subject.
- (e) *For periodical inspection.*—One person for high schools, two persons for intermediate and degree colleges, and colleges doing post-graduate work in one Faculty only, three persons for colleges doing post-graduate work in more than one Faculty and two persons for approved institutions.

S. 37 B. *Research and other institutions.*—

(1) The Syndicate shall have power to declare an institution (other than a college or school), engaged either in research or in other educational and teaching work as an approved institution by the University.

(2) An institution applying for approval under this Statute shall send a letter of application to the Registrar and shall give full information therein in respect of the following matters, namely:—

- (a) status for which it wants to apply;
- (b) constitution and personnel of the managing body;
- (c) subjects and courses, in case such courses are different from those prescribed by the University, in regard to which approval is sought;
- (d) accommodation, equipment and the number of students for whom provision¹ has been or is proposed to be made;
- (e) strength of the staff, their qualifications and salaries and the research or other educational work done by them; and

- (f) fees levied or proposed to be levied and the financial provision made for capital expenditure on buildings and equipment and for the continued maintenance and efficient working of the institution.

(3) Before taking the application into consideration the Syndicate may call for any further information which it may deem necessary.

(4) If the Syndicate decides to take the application into consideration, it may direct a local inquiry to be made by competent persons authorised by it in this behalf. After considering the report made as a result of such local inquiry and making such further inquiry as may appear to it to be necessary, the Syndicate shall grant or refuse the application or any part thereof.

(5) When the application or any part thereof is granted, the Syndicate shall define the status of the institution, specify in case of research institutions, the subject or subjects and in case of others, the courses of teaching in respect of which the institution is approved, communicate the fact to the Academic Council and make a report thereof to the Senate at its next succeeding meeting.

(6) (a) The rights conferred on an institution by approval may be withdrawn or suspended for any period if it has failed to observe any of the conditions of approval or is conducted in a manner which is prejudicial to the interests of Education or is in contravention of such provisions of this Act, the Statutes, Ordinances or Regulations as are applicable to it as an approved institution.

(b) A motion for such withdrawal or suspension shall be initiated only in the Syndicate. The member of the Syndicate who intends to move such a motion shall give notice of it and shall state in writing the grounds on which it is made.

(c) Before taking the said motion into consideration, the Syndicate shall send a copy of the notice and written statement mentioned in clause (b) to the head of the institution concerned together with an intimation that any representation in writing submitted within a period specified in the intimation on behalf of the institution will be considered by the Syndicate:

Provided that the period so specified may, if necessary, be extended by the Syndicate.

(d) On receipt of the representation or on the expiry of the period referred to in clause (c), the Syndicate, after considering the notice of motion, statement and representation, and after such inspection,

if any, by any competent person or persons authorised by the Syndicate in this behalf, and such further inquiry, if any, as may appear to it to be necessary, shall decide whether the approval should be withdrawn or suspended, as the case may be:

Provided that the approval shall not be withdrawn or suspended unless a resolution of the Syndicate to that effect is supported by a majority of at least two thirds of the members present at the meeting, such majority comprising not less than one-half of the members of the Syndicate.

Sec. 24 L. Subject to the general powers of inspection, supervision and calling of periodical returns, to be exercised by the University in accordance with the statutes, approved institutions shall enjoy full autonomy in the matter of prescribing their courses of study and curricula, organisation of their work and in all other academic and administrative matters.

Sec. 24 M. While granting recognition, the Syndicate shall specify the status of an approved institution as a post-graduate, degree or intermediate college or a high school, as the case may be, and members of the staff of such institution shall then enjoy the same rights and privileges as are allowed under this Act and the Statutes, Ordinances, Regulations and Rules made thereunder, to members of the staff of a college or school of equal status in the University in respect of membership of an authority or body of the University or for appointment as an officer of or an examiner in the University.

Sec. 24 N. The Syndicate shall have power to recognise any degree, diploma or certificate granted by an approved institution as equivalent to a corresponding degree, diploma or certificate of the University. The University shall, for this purpose, prescribe by Statutes the conditions and the manner according to which an approved institution shall hold its examinations.

CHAPTER XXII

ADMISSION OF STUDENTS TO AFFILIATED COLLEGES.

S. 31. Admission of students to a college shall be conditions prescribed by the Ordinances in this behalf,

O. 81. Students shall not be eligible for admission to a course of study (a) for the Intermediate Examination, unless they have passed the High School Examination of the University or an examination which is declared equivalent to the High School Examination of the University; (b) for a degree examination, unless they have passed the Intermediate Examination of the University or an examination recognised as equivalent thereto and possess such further qualifications (if any) as may be prescribed by the Ordinances.

O. 82. A student when applying for admission to an affiliated college shall bring with him a certificate as to his conduct signed by the head of the institution in which he was studying during the year previous to his joining the college:

Provided that a student who has passed as a private candidate shall, in lieu thereof, furnish to the principal of the college in which he desires to prosecute his studies, evidence of good conduct.

O. 83. A student shall be recognised as a member of a college as soon as he has been accepted by the principal and has paid the college fees..

O. 84. No student shall be allowed to transfer from one college to another without a transfer certificate in the form prescribed.

O. 85. *If during an academical year a student desires to leave the college of which he has become a member to join another college, he shall obtain the written permission of the principal of the college in which he is studying after making payment of all college dues, and refunding whatever scholarship or bursary has been paid to him from the college funds if required by the college to do so.*

✓O. 86. A student migrating from a college outside the University shall not be admitted to any year of the course other than the first; and such a student, before he is admitted, shall be required by the principal of the college to which he seeks admission, to produce an Eligibility Certificate signed by the Registrar of this University. Application for such a certificate accompanied by a fee of Rs. 5/- should be made to the Registrar on a printed form to be obtained from the office of the University.

O. 87. A student who has not been allowed promotion shall not be admitted into a higher class in another college.

O. 88. (1) When a student has been guilty of grave misconduct or of persistent negligence of work, the principal of the college at which he is studying may, according to the nature and gravity of the offence—
(a) expel,

- (b) rusticate for a period not exceeding one academic year, or
 (c) disqualify such a student from appearing at the next examination.

(2) No student who has been so expelled shall be admitted to another college without the permission of the principal of the aforesaid college, and no student, who has been so rusticated shall be admitted to another college within the period of his rustication.

(3) All cases of expulsion shall be reported to the Syndicate for confirmation.

(4) The following form of transfer certificate is prescribed:—

.....College.....,
 College Transfer Certificate.

Certificate No.....

University Enrolment No.....

Certified that.....
 born on.....son of.....
was a student in the.....
 year.....class.

He leaves (reason).....having
 passed the.....Examination of 19.....,
 or having failed in the.....
 Examination of 19.....in.....His
 conduct, as far as is known to Principal, was.....
 He has paid all charges due from him to the college up to.....

Dated.....19.....

Principal.

N. B.—Details regarding attendance are noted overleaf.

The following to be printed on the reverse of the above certificate.

Subjects.	Total lectures delivered.	Total number of tutorials and practical work done.	No. attended.	Remarks.

Principal.

CHAPTER XXIII

ENROLMENT OF STUDENTS

Sec. 29. Subject to such conditions as may be prescribed by or under this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely :—

- (2) Conditions under which students shall be admitted to courses of study and curricula and examinations for degrees, diplomas and other academic distinctions.

O. 89. No one shall be admitted to any examination of the University unless he has been enrolled as a student of the University.

O. 90. The enrolment fee shall be Rs 2/- and shall be paid once only irrespective of the number of times the candidate appears at examinations of the University or whether he appears as a student or an ex-student of an affiliated college of the University or as a private candidate.

O. 91. In the case of a student who takes a migration certificate to join another University, his membership of the University, shall lapse until such time as he may subsequently return, with a migration certificate from that other University to take some further examination of the University. No enrolment in such cases shall, however, be necessary:

Provided that this lapse of membership shall not debar a student from appearing at an examination in an additional optional subject for a degree already taken in the University.

O. 92. The application for enrolment together with the enrolment fee and the migration certificate from the University concerned (wherever necessary) shall be submitted by a college student through the principal of the college concerned so as to reach the Registrar by the 1st of October in the academic year in which he first joins an affiliated college, and by a private candidate, through the competent authority concerned, by the same date in the year preceding the year in which he takes his first examination in the University.

Students seeking admission to a college affiliated to the University, and private candidates seeking admission to an examination of the University after having been admitted as members of another University incorporated by any law for the time being in force, will not be enrolled unless their applications for enrolment are accompanied by a migration certificate from the previous University.

Candidates who are enrolled after the dates fixed under this Ordinance, on account of late submission of the application or the fee or both, or for want of a migration certificate, shall be required to pay a further fee of Rs. 3/- in each case; and no candidate who is enrolled later than the 31st of December of the year preceding the year of examination will be permitted to sit for any of the next ensuing examinations of the University, and no refund of any of the fees paid by a candidate till then will be permissible.

O. 93. The Registrar shall maintain a register and a card index of all the students enrolled in the University. The card shall contain only the information required for identification purposes at the time of enrolment and shall be supplemented by the register in which information regarding re-admission, transfer, migration, success or failure at an examination shall be entered.

O. 94. On enrolment every student shall receive from the Registrar an enrolment certificate showing the enrolment number under which his name has been entered in the register and that number shall be quoted by the student in all communications to the University and subsequent applications for admission to an examination of the University.

O. 95. Any enrolled student may, at any time, obtain a certified copy of the entries relating to him in the enrolment register on payment to the Registrar of a fee of Rs. 2/-.

A duplicate copy of the enrolment certificate may be granted on payment of a fee of Re 1/-.

O. 96. A migration certificate to join some other University or educational institution, outside the jurisdiction of the University may be granted to a student on his putting in an application.

Special for College Students

O. 97. The principal of every affiliated college shall forward to the Registrar the name of every student admitted or re-admitted to that college together with the enrolment fee required by these Ordinances.

The list of such students shall be forwarded to the Registrar so as to reach him not later than the last day of September in each academic year for such of the students as have been admitted or re-admitted upto the 20th of September. The names of students, admitted or re-admitted after the 20th of September, shall be forwarded within one month of their admission or re-admission.

If the name of any student is struck off the rolls of a college or if he transfers to another college or migrates to another University, the fact will be reported to the Registrar before the end of the term in which his name is struck off or transfer or migration takes place.

The name of any student, rusticated or expelled, shall be reported to the Registrar immediately.

CHAPTER XXIV

DISCIPLINE, HEALTH AND RESIDENCE

Sec. 24 K (1) The University shall establish a Publication Board, a Research Board, a Board of Sports, a Health and Residence Board and such other Boards as may be prescribed by the Statutes.

(2) The powers and functions of the Boards established under sub-section (1) shall be prescribed by the Ordinances.

Sec. 29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely. —

.....
(3) conditions of residence, conduct and discipline of students of the University.

S. 24. The University shall include a Health and Residence Board, whose constitution and functions shall be prescribed in the Ordinances.

S. 36. (1) Every college shall satisfy the University that proper discipline is maintained in the college and the hostels.

(2) Every College shall make adequate provision for the residence of its students not residing with their parents or recognised guardians, and shall provide adequate facilities for the physical exercise and health of its students; and shall employ an efficient system of medical examination and care. Residence in colleges or their hostels shall be governed by rules approved by the University.

(3) Every college and its hostels shall be subject to inspection, in regard to health and residence, on behalf of the Health and Residence Board or of the Syndicate.

(4) Every college to which women students as well as men are admitted shall provide a separate retiring room and other necessary conveniences for women students.

O. 98. The Health and Residence Board shall consist of:—

1. the Vice-Chancellor;
2. one person possessing a diploma or degree in Physical Education;
3. one person possessing a diploma or degree in Hygiene;
4. one Principal of Engineering College;
5. one Director of Education; and
6. two Principals of degree colleges.

O. 99. Members shall be nominated by the Syndicate and shall hold office for three years.

O. 100. The functions of the Health and Residence Board shall be to advise the Syndicate on measures to be adopted for—

- (i) The health of students.
- (ii) Physical education and training of students.
- (iii) Medical inspection of students and follow-up work.
- (iv) Hygiene and sanitation of hostels, colleges, school-buildings and University buildings.
- (v) Conditions of residence of students.

O. 101. Provided that accommodation is available, every undergraduate student shall reside in a hostel maintained by a college or in a hostel recognised by the University or with a parent or guardian.

Note—The term "guardian" means and includes—

- [1] A guardian appointed under the Guardians and Wards Act, or a guardian appointed by the Court of Wards
- [2] A person declared in writing by the student's parent or if he has no parent living, by the person described in clauses [1] above to be his guardian and approved by the principal of the college.
- [3] If the student has no parent or guardian, as above, a person approved by the principal of his college.

The person approved under [2] and [3] above, shall reside in or near the town in which the college is situated and shall not be a student still reading in the post-graduate or other classes of the same or another college.

O. 102. If no room is available in a hostel maintained by an affiliated college or in a hostel recognised by the University, the principal of his college may permit a student to live in lodgings:

Provided that the keeper of the lodgings undertakes (a) to reserve the lodgings for college students, (b) to permit inspection at any time by the principal or principals concerned and by a person deputed by the Syndicate or the Board of Inspection and (c) to abide by their requirements regarding supervision.

O. 103. No student shall be required to attend religious instruction or religious observance in the hostel against the wishes of his parent or guardian.

O. 104. The manager or secretary of a hostel who desires to have his institution placed upon the list of recognised hostels, shall apply to the Syndicate through the Registrar, sending a copy of the rules of the institution together with a sketch plan of the buildings and grounds.

O. 105. The Syndicate, if the application is in order, shall refer it to the Board of Inspection, which shall arrange for an inspection of the institution. The Board of Inspection shall consider the report of the Inspectors and shall forward it to the Syndicate with its recommendations.

O. 106. The Syndicate, after consideration of the report of the Inspectors and the recommendations of the Board of Inspection thereupon, shall inform the manager or secretary whether his institution can or cannot be placed upon the list of recognised hostels and, in the event of the application being refused, shall communicate the reasons for refusal.

O. 107. A recognised hostel shall be open to inspection at any time by the principal of a college, who has students residing therein and by any persons deputed by the Syndicate or the Board of Inspection to visit it.

Once in every session, the Board of Inspection shall arrange for the inspection of all recognised hostels and a recognised lodgings and the persons so deputed to visit any hostel shall be supplied before hand with all necessary information including (1) the terms of recognition, (2) the rules of the hostel as last approved by the University, (3) the name of the warden and of the manager of the hostel, he shall be requested to have regard not only to the existing condition of the hostel but also to the continuity and preservation of previous records such as admission and conduct registers which are of permanent value for purpose of further reference. The report of the Inspectors shall be considered by the Board of Inspection, and forwarded to the Syndicate with its recommendations.

O. 108. A recognised hostel shall be required to maintain and to produce for inspection, when called for, an admission register, a register of attendance and a conduct register.

The admission and conduct registers can conveniently be maintained in one book which should be a bound book of sufficient size maintained as a permanent record to which reference can be made in subsequent years.

O. 109. The manager shall at once report to the Registrar any alteration in the rules of the hostel or any change either of warden or of manager for the confirmation of the Syndicate and the Syndicate shall thereupon notify the principal of the college whose students reside therein of the proposed changes and shall consider his opinion before confirming them.

O. 110. The principal of a college shall satisfy himself that the management of a recognised hostel in which students of his college reside is maintained in accordance with the conditions under which it received its recognition, and shall report to the Syndicate if it is not so maintained.

O. 111. Students expelled from colleges shall not be admitted to any recognised hostel or approved lodgings.

O. 112. Students who have been rusticated shall not be permitted to reside in a recognized hostel or approved lodgings during the period of their rustication.

O. 113. Before cancelling recognition of a hostel, the Syndicate shall inform the manager of the hostel of the grounds on which it considers it necessary to withdraw the recognition granted. The Syndicate shall consider the written explanation, if any, that may be furnished by the manager within fourteen days of its communication made to him, and may then cancel the recognition or pass such other order as it deems fit.

O. 114. No student shall be admitted to a hostel without the approval in writing of (1) his principal, (2) the warden of any hostel in which he previously resided. Reference to these approvals to be recorded in the hostel admission register.

CHAPTER XXV

SCHOLARSHIPS, MEDALS, PRIZES, ETC.

Sec. 4. The University shall have the following powers, namely:—

-
- (10) to institute and award scholarships and other benefits, in accordance with the Statutes and the Regulations.

Sec. 23A. (2) Without prejudice to the generality of the foregoing provision and subject to such conditions as may be prescribed by or under the provisions of this Act, the Academic Council shall exercise the following powers and perform the following functions, namely:—

- (ix) to advise the Syndicate regarding the conditions of award and tenure of University scholarships and other benefits.

O. 115. The following University scholarships shall be awarded:—

- (a) Two scholarships of Rs. 16/- p.m. each to be awarded to candidates who stand first and second at the High School Examination tenable for 24 months; two scholarships of Rs. 12/- p. m. each to candidates who stand third and fourth at the High School Examination. These shall be open to men and women. One scholarship of Rs. 16/- p. m. to be awarded to a woman candidate who stands first at the High School Examination amongst the women students.
- (b) Two scholarships of Rs. 25/- p. m. each to be awarded to candidates who stand first and second at the Intermediate Examination with Arts subjects tenable for 24 months. Similarly, two scholarships of Rs. 25/- p. m. each to be awarded to students who secure first and second positions with Science subjects. Two scholarships of Rs. 25/- p. m. each to be awarded to candidates who stand first and second at the Intermediate Examination in Commerce. One scholarship of Rs. 25/- p. m. to a woman candidate who stands first at the Intermediate Examination among the women students.
- (c) One scholarship of Rs. 25/- p. m. to be awarded to a candidate who stands first at the Intermediate Examination in Agriculture.
- (d) Two scholarships of the value of Rs. 40/- p. m. each

to be awarded to candidates who stand first and second at the B. A. Examination of the University. Scholarships will be tenable for twenty-four months, at any college affiliated to the University upto the M. A. standard.

Similarly, two scholarships of the value of Rs. 40/- p. m. each to candidates standing first and second at the B. Sc. Examination of the University; and one scholarship of the value of Rs. 40/- p. m. to be awarded to a candidate standing first at the B. Com. Examination of the University.

- (e) Five scholarships of Rs. 30/- per month each, tenable for 12 months, to be awarded in the Medical Faculty—one to a candidate who stands first at the first M. B., B. S. Examination held in April; one to a candidate who stands first at the 2nd M. B., B. S. Examination held in April; one to a candidate who stands first at the Final M. B., B. S. Part I Examination held in April; one to a candidate who stands first at the 2nd M. B., B. S. Examination, held in October; and one to a candidate who stands first at the Final M. B., B. S. Examination Part I held in October—*provided that in each case the candidate passes the examination at the first attempt, secures at least 60 per cent marks in the aggregate and joins the higher class for further studies in the Faculty.*
- (f) Three scholarships of Rs. 25/- per month each to be awarded in the Pharmaceutical side of the Medical Faculty, tenable for 12 months—one to a candidate who stands first at the I. Pharm. Part II Examination; one to a candidate who stands first at the B. Pharm. Part I Examination; and one to a candidate who stands first at the B. Pharm. Part II Examination—*provided that in each case the candidate passes in first class and at the first attempt and joins a higher class for further studies in the branch.*
- (g) Two scholarships of Rs. 30/- per month each to be awarded in the Engineering Faculty, tenable for 12 months—one to a candidate who stands first at the F. E. Examination; and one to a candidate who stands first at the S. E. Examination.—*provided that in each case the candidate passes in the first class*

and at the first attempt and joins a higher class for further studies in the Faculty.

- (b) Three scholarships—one of Rs. 25/- and two of Rs. 40/-, each, per month—to be awarded in the Law Faculty, tenable for 12 months—one scholarship of Rs. 25/- per month to a candidate who stands first at the LL. B. Previous Examination—provided that he joins LL. B. Final class; one scholarship of Rs. 40/- per month to a candidate who stands first at the LL. B. Final Examination, provided he joins LL. M. course; and one scholarship of Rs. 40/- per month to a candidate who stands first at the LL. M. Part I Examination provided that he joins LL. M. Part II course—provided that in each case the candidate passes in the first class and at the first attempt.
- (i) Research scholarships, not exceeding six, of the value of Rs. 125/- p. m. each to be awarded annually to candidates selected by the Syndicate. The scholarships will be tenable for 24 months on condition that the periodical reports of the scholarship-holder are satisfactory and he devotes his whole time to study and research and does not engage himself in remunerative work or prepare for any competitive examination during the period of the scholarship.

NOTE—For the first award of a scholarship first class is necessary. In the case of reserved scholarships, however, candidates must have secured at least second class marks.

O. 116. Recipients of scholarships shall be awarded the above scholarships for which they are eligible, provided they pursue higher studies in recognised institutions within the territorial jurisdiction of the University failing which, scholarships shall be awarded to the next best students who fulfil the conditions concerned

Consideration will be made in the case of such scholars in whose case there exists no provision for the study of their subjects in the University of Rajputana.

O. 117. Candidates for the M.A., M.Sc., or M. Com. Previous Examination will be paid scholarship only for 10 months (July to April) for work during a full college session.

O. 118. Candidates for the M.A., M.Sc., or M. Com. Final Examination will be paid scholarship only for the months of May to June

when they join the college in July for prosecuting their studies further after passing the M.A., M.Sc., or M. Com. Previous Examination.

O. 119. If a scholarship-holder for the M.A., M.Sc., or M. Com. Previous Examination is unable to appear at the examination on account of sickness or other cause, scholarship for the months of March and April will be paid to him only if the principal concerned certifies that the scholarship-holder diligently studied for the examination, but was unable to take the examination for reasons beyond his control

O. 120. The payment of a scholarship will be stopped if a candidate discontinues his studies during the middle of a session (July to April), from such date as he leaves the college.

O. 121. Scholarships will be continued only if periodical reports of progress and conduct of the scholars are satisfactory.

O. 122. The Research Board will recommend the award of research scholarships to the Syndicate.

CHAPTER XXVI.

UNIVERSITY COMMON SEAL

Sec. 3. (2) The University shall have perpetual succession and a Common Seal, and shall sue and be sued by the said name.

Sec. 22. Syndicate-Functions:—

... ..

(h) to determine the form, provide for the custody and regulate the use of the Common Seal of the University.

O. 123. The following shall be the common seal of the University:—

There shall be a circle and inside it a smaller circle. Between the space of the two circles, at the top, "Rajputana Vishwavidyalaya" (in Devanagari script) and below it "University of Rajputana" (in English) be inscribed. In the middle "1947"—the year of inauguration of the

University—and at the bottom, the University motto “धर्मो विश्वस्य जगतः प्रतिष्ठा” be inscribed. Inside the smaller circle, there be one Ashoka wheel, one lamp of oriental type and one open book, suitably arranged.



CHAPTER XXVII CONVOCATION.

Sec. 6 (2) Convocations shall be held at Jaipur, or, by invitation, in States with affiliated colleges.

Sec. 8. B. The Maharaj Pramukh of Rajasthan shall be the Patron of the University, and shall, when present, preside at the Convocations thereof.

Sec. 10. (2) In the absence of the Patron, the Chancellor shall, when present, preside at the Convocations of the University.

Sec. 13. (1) The Vice-Chancellor... shall, in the absence of the Chancellor, preside at any Convocation of the University...

S. 97. A Convocation for conferring degrees shall ordinarily be held every year in the month of November but a special convocation may also be held at such other time as may be found necessary or convenient. The place of the Convocation and the actual date shall in each case be fixed by the Syndicate.

S. 98. The Convocation shall consist of the body corporate of the University.

S. 99. Not less than six weeks' notice shall be given by the Registrar of all meetings of the Convocation.

S. 100. The Registrar shall, with the notice, issue to each member of Convocation a programme of the procedure to be observed thereat.

S. 101. The procedure to be observed at a Convocation shall be prescribed by the Senate.

S. 102. The colours of the various Faculties shall be as follows:—

Faculty of Arts...	Red.
Faculty of Science....	Light Blue,
Faculty of Commerce...	Yellow.
Faculty of Law...	Purple.
Faculty of Medicine and Pharmaceutics...	Dark blue.
Faculty of Engineering and Technology...	Orange.
Faculty of Education...	Crimson.

S. 103. Academic dress of the University is worn at Convocations for conferring degrees.

S. 104. Such of the members of the bodies of the University of Rajputana as are graduates of other Universities, may appear in the academic dress of their own Universities, or in such dress as may be prescribed by the University.

S. 105. Academic dress to be worn by the authorities of the University and graduates of the University of Rajputana—

Chancellor	Gold Broche.	} and academic cap.
Vice-Chancellor	Silver Broche.	
Registrar	Cream gown with rose border.	
Members of University Bodies	Black gown and hood of the colour prescribed by the Univer- sity for the degree concerned and safa of the same colour as hood, or bare-headed.	
For Bachelors of Arts, Science, Science (in Agriculture), Com- merce, Law, Education, Engi- neering and Medicine.	Black gown and hood bearing the colour of the Faculty concerned, and safa which shall be of the same colour as hood, or bare-headed.	
For Bachelors of Pharmacy	Black gown and dark blue hood with a yellow stripe in the middle of the hood and dark blue safa with yellow band or bare-headed.	

For Masters of Arts, Science,
Commerce and Law.

Black gown and hood bearing the colour of the Faculty concerned with stripes of chocolate colour on it, and safa which shall be of the same colour as hood, or bare-headed.

For Doctors of Philosophy
(Ph. D.)

Scarlet coloured gown and hood bearing the distinct colour of the Faculty concerned with white stripes in addition to chocolate colour stripes, and safa which shall be of the same colour as hood, or bare-headed.

Note.—The University prescribes the colours and recommends that preferably khadi cloth be used.

Convocation Procedure.

S. 106. The candidates for degrees must, 15 clear days before the date fixed for the Convocation, inform the Registrar in writing of their intention to be present. No candidate shall be admitted to the Convocation who has not sent in his name to the Registrar within the prescribed time. In exceptional cases, the Vice-Chancellor may permit candidates who have not sent in their names to the Registrar within the prescribed time, to be admitted to the Convocation, provided their applications are received by the Registrar not later than 48 hours before the time of the Convocation and are accompanied by a fee of Rs. 2/- in each case.

S. 107. Such candidates as are unable to present themselves in person at the Convocation will be admitted to the degree in absentia by the Vice-Chancellor and their diplomas given direct by the Registrar on application and on payment of a fee of Rs. 10/- in each case.

S. 108. No candidate shall be admitted to Convocation who is not in proper academic dress, prescribed by the University.

S. 109. For the award of degrees at Convocation, students shall be presented to the Chancellor by the Deans of Faculties concerned.

S. 110. Diplomas to graduates attending Convocation will be supplied to them in the Convocation Hall, before the Convocation begins.

No Diploma will be issued on the day of the Convocation after the Convocation.

S. 111. The Chancellor, the Vice-Chancellor and the Registrar will wear their special robes. Members of the Senate, Syndicate

and Academic Council will wear the proper academic costume of the University of which they are graduates or that prescribed by the University of Rajputana.

S. 112. The Chancellor, the Vice-Chancellor, members of the Senate, Syndicate and Academic Council shall assemble in the meeting room at the appointed hour and shall walk in procession in the following order to the Convocation Hall:—

The Registrar.
Members of the Academic Council.
Members of the Senate.
Members of the Syndicate.
The Deans of the Faculties.
The Vice-Chancellor.
The Chancellor.

S. 113. The Chancellor, the Vice-Chancellor and the members of the Syndicate and the Registrar shall take their seats on the dais and the members of the Senate and of the Academic Council on both sides of the dais in places, reserved for those bodies.

S. 114. On the procession entering the Hall, the candidates shall rise and remain standing until the Chancellor, the Vice-Chancellor, and the members of the Senate, Syndicate and Academic Council have taken their seats.

S. 115. The Vice-Chancellor (having obtained the consent of the Chancellor) shall declare the Convocation open. When the Chancellor is not present, the Registrar will, with the permission of the Vice-Chancellor, declare the Convocation open.

S. 116. The Dean of each Faculty or, in his absence, the senior member of the Faculty, will present the candidates for degrees to the Chancellor in the following order:—

In the Faculty of Arts—

Bachelor of Arts.
Master of Arts.
Doctor of Philosophy.
Doctor of Literat

In the Faculty of Science—

Bachelor of Science.
 Master of Science.
 Bachelor of Science (in Agriculture)
 Doctor of Philosophy.
 Doctor of Science.

In the Faculty of Commerce—

Bachelor of Commerce.
 Master of Commerce.
 Doctor of Philosophy.

In the Faculty of Law—

Bachelor of Laws.
 Master of Laws.
 Doctor of Laws.

In the Faculty of Engineering—

Bachelor of Engineering.

In the Faculty of Medicine—

Bachelor of Medicine, and Bachelor of Surgery.
 Bachelor of Pharmacy.

In the Faculty of Education—

Bachelor of Education.
 Master of Education.

S. 117. In all cases the candidates shall be presented in the following form:—

1. Supplication.

(After the Chancellor and Members
 have taken their seats).

“Mr. Chancellor,

On behalf of....and....others
 who have been examined and found qualified for the Degree of....
 I move that the Senate do pass a Grace for their
 admission to the said Degree ”

After the supplication by the Dean, the Chancellor to say—

“DOTH IT PLEASE YOU THAT THIS GRACE BE PASSED?”

And the Senate assenting (or after a short pause) the Chancellor to say—

“THIS GRACE IS PASSED”

2. Presentation.

(After the Chancellor pronounces
the Grace to have been passed.)

“Mr. Chancellor,

I present to you some of the aforesaid candidates who have been
examined and found qualified for the Degree of.....
to which I pray they may be admitted”.

After the presentation and prayer by the Dean for admission of
candidates to the Degree, the Chancellor to say—

“By the authority given me as Chancellor of this University, I
admit you, one and all, to the Degree ofand I charge you
that ever in your life and conversation you prove yourselves worthy of
the same”.

S. 118. After the degrees have been conferred, recipients of
University medals and prizes, and representatives of colleges which have
won University Athletic or Tournament Challenge Trophies shall be called
out individually by the Registrar and shall stand before the Chancellor,
or the Vice-Chancellor, who shall present the medals, prizes or trophies.

S. 119. When all the candidates have been admitted to their
degrees, and the medals and trophies have been presented, the Convoca-
tion address will be delivered.

S. 120. After this, the Chancellor will declare the Convocation
dissolved. The procession will then leave the Convocation Hall in the
same order as that in which it entered, the *graduates standing*.

CHAPTER XXVIII

DEGREES.

A—General

Sec. 4. The University shall have the following powers, namely:—

- (2) to hold examinations and to confer degrees and
other academic distinctions upon:—

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

-
- (14) degrees, diplomas and other academic distinctions to be awarded by the University.

Sec. 29. Subject to such conditions as may be prescribed by or under provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

-
- (2) conditions under which students shall be admitted to courses of study and curricula and examinations for degrees, diplomas and other academic distinctions.

S. 15. The Senate may, on the recommendation of the Syndicate, by a resolution passed with the concurrence of not less than two-thirds of the members voting, withdraw any degree or diploma conferred by the University.

S. 39. The University may confer the following degrees:—

- B. A., Pass and Honours.
- B. Sc., Pass and Honours.
- B. Com.
- B. E.
- B. Sc. (Ag.)
- B. Ed.
- M. Ed.
- M. B., B. S.
- B. Pharm.
- B. O. L.
- LL. B.
- M. A.
- M. Sc.
- M. Com.
- M. O. L.
- LL. M.
- Ph. D.
- D. Litt.
- D. Sc.
- LL. D.

Honoris Causa

D. Litt.

D. Sc.

LL. D.

(For degrees in the various Faculties see Chapters XII to XVIII)

B.—Honorary Degrees.

Sec. 4. The University shall have the following powers, namely:—

(3) to confer honorary degrees or other distinctions on approved persons in the manner laid down in the Statutes.

Sec. 34. A. (1) There shall be a Standing Committee for the conferment of Honorary Degrees consisting of the following, namely:—

(i) the Vice-Chancellor;

(ii) the Chief Justice of the High Court of Rajasthan; and

(iii) the Dean of the Faculty concerned.

(2) No honorary degree, diploma or other academic distinction shall be conferred on any person unless the proposal for the conferment thereof has been—

(a) originally made by the said Committee;

(b) approved of by the Syndicate;

(c) passed by the Senate; and

(d) confirmed by the Chancellor:

Provided that, in cases of emergency, such proposal may be confirmed by the Chancellor on the recommendation of the said Committee, if the recommendation has been approved by the Syndicate.

S. 16. (2) Any honorary degree conferred by the University may, with the previous approval of two-third of the members present at any meeting of the Senate and the sanction of the Chancellor, be withdrawn by the Syndicate.

S. 39. The University may confer the following degrees:—

Honoris Causa

D. Litt.

D. Sc.

LL. D.

**C—Award of the degree of Ph. D.
(Doctor of Philosophy).**

O. 124. A candidate for the degree of Ph. D. must be an M. A., M. Sc., or M. Com. of this University or a recognised University of at least two years' standing at the time of conferment upon him of the Ph. D. degree, provided that in the case of candidates with Master's degree of a recognised University, the Master's degree should have been taken after taking the Bachelor's degree with full course presented for the degree. Standing shall date from the convocation at which the Master's degree was conferred upon him.

O. 125. A candidate for the Ph. D. degree shall apply to the University for admission to the degree stating his qualifications and submitting a scheme or an outline of the investigation he proposes to undertake and enclosing a statement of any work he may have done in the subject.

The application shall be accompanied by a sum of Rs. 50/-. If the application is rejected, the fee paid by the candidate shall be refunded after deducting Rs. 10/-. If the application is entertained, the balance of the fee of Rs. 150/- required for admission to the degree shall be paid at the time of the presentation of the thesis.

O. 126. The application shall be placed before the Research Board constituted by the University. The Board shall satisfy itself that the subject offered is one which can profitably be pursued and that the candidate possesses the requisite qualifications and equipment. If the Board is satisfied on these points, it shall recommend the acceptance of the application.

O. 127. Except in special cases approved by the Syndicate on the recommendations of the Research Board, all candidates for the degree of Ph. D. must work under the guidance or direction of a recognised supervisor.

O. 128. Every accepted candidate shall pursue a course of study as a student of the University for not less than two academical years under the direction of the supervisor.

O. 129. Minimum qualifications for teachers in the University or of colleges affiliated to the University to work as supervisors for guiding research work shall be as follows:—

1. University Professors and Readers;

- or
2. A teacher of five years' experience of teaching post graduate classes or Honours classes plus recognised research work;
- or
3. Professors of recognised ability;
- or
4. A teacher who has already successfully guided research students for a doctorate degree of some recognised Universities.

N. B.—One who was the head of a post-graduate department at the time this University was started and who has three years teaching experience of post-graduate classes, is also eligible.

O. 130. The maximum number of students to be taken by a supervisor for research work shall be three.

(It is recommended that the principals of colleges should give the necessary relief to a supervisor who has accepted research students for guidance, it being understood that if a supervisor has the maximum number of students (three) he should not be given more than twelve periods of instructional work per week).

O. 131. The candidate shall pursue his research at the headquarters of his supervisor, the period of residence being not less than 100 days in each year, except that a portion of the period of residence may, for the sake of special guidance or facilities, be spent elsewhere even outside the University, as directed by the supervisor.

O. 132. The candidate must be duly enrolled as a research student of the University. If the supervisor be a University Professor or Reader, the tuition fee shall be paid to the University. The tuition fee shall be Rs. 150/- per annum payable in advance in three equal instalments. The tuition fee, to be charged by colleges shall be determined by the college concerned, but in no case shall it exceed Rs. 150/- per annum, per candidate.

O. 133 The supervisor shall submit a report on a candidate's work every six months to the Research Board which will forward it with its remarks to the Syndicate.

O. 134. On receiving a synopsis of thesis two months before from the candidate, the Syndicate shall appoint a Board of three referees on the recommendation of the Research Board. The supervisor shall be one of the referees as also the convener of the Board and the other two shall be competent qualified external referees who are themselves distinguished

scholars in the subject. If a *viva voce* examination is considered necessary by the Board of referees, it shall be conducted by this Board itself.

Note—Synopsis here does not mean the original plan of work submitted at the time of registration. It means a brief summary of the thesis.

O. 135. The relevant Boards of Studies shall suggest twice the number of referees required i.e. four external referees in each case for consideration of the Research Board and the Syndicate.

O. 136. After the thesis is completed, the candidate shall supply five printed or type-written copies of his thesis, together with a sum of Rs. 100/-, the balance on account of the fee. Published matter may also be incorporated as part of the thesis. The language used in every thesis shall be English except in the case of subjects connected with an oriental language, where the thesis may, at the option of the candidate, be presented in that language. The thesis shall comply with the following conditions:—

(1) It must be a piece of research work characterised either by the discovery of facts or by a fresh approach towards interpretation of facts or theories. In either case it should prove the candidate's capacity for critical examination and sound judgment. The candidate shall indicate, how far the thesis embodies the results of his own investigation and in what respects it appears to him to advance the study of the subject.

(2) It shall also be satisfactory in respect of its literary presentation and must be in a form suitable for publication.

A certificate shall be furnished by the supervisor indicating how far the work is the original work of the candidate.

O. 137. In the event of divergence of opinion among the referees regarding the thesis, the report of each shall be communicated to the others, with a view to agreement, if possible. If this is not arrived at, the opinion of the majority shall stand.

O. 138. The report of the Board of referees shall be communicated to the Syndicate together with reports of the individual referees regarding the thesis and a note of any divergence of opinion regarding the *viva voce* examination, if held. If there is no unanimity, the verdict of the majority of the Board of referees shall be final.

O. 139. If the candidate is permitted to improve and re-submit his thesis, he shall be asked to re-submit it not earlier than six months or later than 12 months from the date of such permission. In the event of

no definite recommendation being made by a majority of the referees, the thesis shall be rejected and the candidate informed accordingly.

O. 140. The candidate shall not be allowed to present his thesis more than twice.

CHAPTER XXIX

UNIVERSITY PROFESSORSHIPS AND READERSHIPS.

Sec. 4. The University shall have the following powers, namely:—

(5) to institute Professorships, Readerships, and any other teaching posts required by the University.

(6) to appoint persons as Professors, Readers, or otherwise as University Teachers.

Sec. 23 A. Academic Council—Functions:—

(4) to advise the Syndicate regarding the institution of University teaching posts in particular subjects.

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

(5) institution and maintenance by the University of departments, colleges, institutes of research or specialised studies and hostels.

Sec. 29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

(6) emoluments and conditions of service of University Teachers.

S. 19. Such University Professorships and University Readerships and other University teaching posts shall be instituted as may be determined by the Syndicate on the recommendation of the Academic Council. The duties, emoluments and conditions of service of University Teacher shall be prescribed in the Ordinances.

S. 20. (1) No person shall be appointed as a University Teacher except on the recommendation of a Committee of Selection constituted for the purpose.

(2) The Committee of Selection shall consist of the following members:—

- (i) the Vice-Chancellor, Chairman;
- (ii) the Dean of the Faculty concerned;
- (iii) one member of the Syndicate selected by the Syndicate;
- (iv) two persons possessing special knowledge of the subject concerned, appointed by the Chancellor on the recommendation of the Syndicate.

(3) The Committee of Selection shall report to the Syndicate. If the Syndicate accepts the recommendation, it will make the appointment. If it disagrees, it will refer the matter back to the Committee of Selection with a request for a fresh recommendation.

O. 141. The duties of the University Professor or University Reader shall be as follows:—

- (1) to engage in research and conduct post-graduate teaching;
- (2) to guide and supervise research work of such students as are assigned to him by the Syndicate,
- (3) to give extension lectures at various centres as arranged by the Syndicate.

CHAPTER XXX

EXAMINATIONS

A—General and Miscellaneous.

Sec. 22. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate shall exercise the following powers and perform the following functions, namely:—

- (i) to arrange for the holding of examinations and publishing results thereof;
- (k) to maintain proper standards of teaching and examination in consultation with the Academic Council,

Sec. 23A. (1) The Academic Council shall have control and general regulation of, and be responsible for the maintenance of the standards of teaching and examination within the University.

(2) Without prejudice to the generality of the foregoing provision and subject to such conditions as may be prescribed by or under the provisions of this Act, the Academic Council shall exercise the following powers and perform the following functions, namely:—

- (i) subject to the approval of the Syndicate, to make, amend and cancel regulations laying down courses of study and curricula;
- (ii) to propose to the Syndicate Ordinances concerning admission to the University or to its examinations, courses of study and curricula, schemes of examination, and attendance; provided that proposals regarding courses of study and curricula and schemes of examination shall be made after considering the reports, when necessary, of the Faculty or Faculties concerned;
- (iii) to make proposals regarding the maintenance of standards of teaching and examination;
- (iv) to advise the Syndicate regarding University fees.

Sec. 29. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Syndicate may make Ordinances, consistent with this Act and the Statutes, to provide for all or any of the following matters, namely:—

.....
 (2) conditions under which students shall be admitted to courses of study and curricula and examinations for degrees, diplomas and other academic distinctions,

(4) conduct of examinations.

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters, namely:—

.....
 (6) fees to be charged for courses of study and curricula prescribed by the University and for admission to its examinations, degrees and diplomas;

(8) conditions governing the appointment, duties and remuneration of examiners.

O. 142. Students shall not be eligible for admission to a course of study for an examination unless they have passed the qualifying examination of the University or any other examinations recognised by the University as equivalent thereto, and possess such further qualifications, if any, as may be prescribed by the Ordinances.

O. 143. Every candidate for an examination of the University shall except when exempted by any of the Ordinances, be enrolled as a member of an affiliated college before entering upon the course prescribed for such examination and should have undergone a regular courses of study at that college.

O. 144. The expression "a regular course of study" means attendance at atleast (a) 75 per cent of the lectures delivered and (b) 75 per cent of the tutorials and practicals (taken together) done in an affiliated college in the subject or subjects for the examination at which a candidate intends to appear.

For purposes of this Ordinance:—

(1) In the Faculty of Medicine the minimum attendance at the practicals and clinicals separately in each subject shall be 85 per cent.

(2) In the Faculty of Engineering the minimum attendance both (a) at the lectures and (b) at the practicals separately, in each subject, shall be 85 per cent.

Sec. 37C. The total number of working days in an academic year, exclusive of examination days, shall not be less than—

(a) 180, in the case of degree colleges or post-graduate colleges; and

(b) 210, in the case of intermediate colleges and high schools.

O. 145. If, on account of bonafide illness supported by a medical certificate or certified by the principal, from his personal knowledge or any other reason deemed sufficient by the Syndicate, the total attendance of a student of an affiliated college falls short of the required minimum attendance, the principal of a college may condone a shortage not exceeding 3% of the total number of (a) lectures delivered and (b) practicals and tutorials (taken together), done in each subject. If the shortage is larger but not more than 10% of the total number of (a) lectures delivered and (b) tutorials and practicals, his case shall be referred to the Syndicate.

O. 146. A regular candidate preparing in an affiliated college for any

examination of the University shall, on or before the 1st December of the year preceding the examination—

(1) pay into the office of the Registrar the fee prescribed for such examination and the marks fee of Re. 1/-;

(2) intimate the subject or subjects in which he desires to present himself for examination; and

(3) along with his application for admission, furnish the Registrar with a certificate from the principal of the affiliated college certifying that he has fulfilled the conditions laid down by the University, and is of good character:

Provided that the applications and the fees mentioned above shall be submitted by candidates taking the examinations in the Faculty of Medicine—

(i) by the 1st of March in the case of the candidates who take the examinations in the months of March-April following; and

(ii) by the 15th of September in the case of the candidates who take the examinations in the month of October following.

O. 147. A candidate who, from sickness or other cause, is unable to present himself for any examination, shall not receive a refund of his fee provided that the Syndicate may, for sufficient cause, permit the candidate to present himself for the next ensuing examination, or failing that also at the next following examination, without payment of a further fee. In such a case the application must be sent so as to reach the Registrar not earlier than the commencement of the examination and not later than a month after the date of the commencement of the examination at which the candidate is unable to appear and must be forwarded in the case of candidates who appeared as regular students or ex-students of affiliated colleges, by the principal of the college concerned and in the case of private candidates by the competent authority concerned, who forwarded the candidate's original application for permission to appear at the examination. In all cases of sickness, whether of the candidate or of any relation of his, a medical certificate from a qualified medical practitioner shall be attached to the application.

The examination fee of a candidate who dies before he finishes his part of the examination or of a candidate who is debarred from appearing at the examination may be refunded.

O. 148. A candidate when applying for admission, to one or more subsequent examinations, shall pay the prescribed fee for such examination on each occasion on which he applies for admission.

O. 142. Students shall not be eligible for admission to a course of study for an examination unless they have passed the qualifying examination of the University or any other examinations recognised by the University as equivalent thereto, and possess such further qualifications, if any, as may be prescribed by the Ordinances.

O. 143. Every candidate for an examination of the University shall except when exempted by any of the Ordinances, be enrolled as a member of an affiliated college before entering upon the course prescribed for such examination and should have undergone a regular courses of study at that college.

O. 144. The expression "a regular course of study" means attendance at atleast (a) 75 per cent of the lectures delivered and (b) 75 per cent of the tutorials and practicals (taken together) done in an affiliated college in the subject or subjects for the examination at which a candidate intends to appear.

For purposes of this Ordinance:—

(1) In the Faculty of Medicine the minimum attendance at the practicals and clinicals separately in each subject shall be 85 per cent.

(2) In the Faculty of Engineering the minimum attendance both (a) at the lectures and (b) at the practicals separately, in each subject, shall be 85 per cent.

Sec. 37C. The total number of working days in an academic year, exclusive of examination days, shall not be less than—

(a) 180, in the case of degree colleges or post-graduate colleges; and

(b) 210, in the case of intermediate colleges and high schools.

O. 145. If, on account of bonafide illness supported by a medical certificate or certified by the principal, from his personal knowledge or any other reason deemed sufficient by the Syndicate, the total attendance of a student of an affiliated college falls short of the required minimum attendance, the principal of a college may condone a shortage not exceeding 3% of the total number of (a) lectures delivered and (b) practicals and tutorials (taken together), done in each subject. If the shortage is larger but not more than 10% of the total number of (a) lectures delivered and (b) tutorials and practicals, his case shall be referred to the Syndicate.

O. 146. A regular candidate preparing in an affiliated college for any

examination of the University shall, on or before the 1st December of the year preceding the examination—

(1) pay into the office of the Registrar the fee prescribed for such examination and the marks fee of Re. 1/-;

(2) intimate the subject or subjects in which he desires to present himself for examination; and

(3) along with his application for admission, furnish the Registrar with a certificate from the principal of the affiliated college certifying that he has fulfilled the conditions laid down by the University, and is of good character:

Provided that the applications and the fees mentioned above shall be submitted by candidates taking the examinations in the Faculty of Medicine—

(i) by the 1st of March in the case of the candidates who take the examinations in the months of March-April following; and

(ii) by the 15th of September in the case of the candidates who take the examinations in the month of October following.

O. 147. A candidate who, from sickness or other cause, is unable to present himself for any examination, shall not receive a refund of his fee provided that the Syndicate may, for sufficient cause, permit the candidate to present himself for the next ensuing examination, or failing that also at the next following examination, without payment of a further fee. In such a case the application must be sent so as to reach the Registrar not earlier than the commencement of the examination and not later than a month after the date of the commencement of the examination at which the candidate is unable to appear and must be forwarded in the case of candidates who appeared as regular students or ex-students of affiliated colleges, by the principal of the college concerned and in the case of private candidates by the competent authority concerned, who forwarded the candidate's original application for permission to appear at the examination. In all cases of sickness, whether of the candidate or of any relation of his, a medical certificate from a qualified medical practitioner shall be attached to the application.

The examination fee of a candidate who dies before he finishes his part of the examination or of a candidate who is debarred from appearing at the examination may be refunded.

O. 148. A candidate when applying for admission, to one or more subsequent examinations, shall pay the prescribed fee for such examination on each occasion on which he applies for admission.

O. 149. Upon receipt of the fee prescribed, the Registrar shall, if the candidate is admitted, furnish the candidate with an admission card permitting him to appear at the examination.

O. 150. Permission to appear at a University examination may be withdrawn for conduct which, in the opinion of the Syndicate, justifies the candidate's exclusion.

O. 151. A candidate may not be admitted to the examination hall unless he produces to the officer conducting the examination his examination admission card or satisfies such officer that it will be produced.

O. 152. No student shall be allowed to appear at a University examination other than the supplementary Intermediate, B.A., B. Sc., B. Com examinations unless he has fulfilled the condition of minimum attendance at lectures, practicals and tutorials etc. In the case of a candidate who has completed the regular course of study for 2 years and is debarred from appearing at the Intermediate, B. A., B. Sc., B. Com., or the first or the final M. B., B. S. (part I and part II) Examination owing to shortage of attendance percentage shall be exempted for the one year only at the end of which the candidate appears at a subsequent examination.

O. 153. Where there are two examinations for any degree such as a previous and a final examination and there are two or more alternative courses for such a degree a candidate for the degree must take the same course as the final examination as he has taken in the previous examination.

O. 154. A graduate of the University, or of an Indian University approved by the University, may be admitted to an examination in the University for a postgraduate degree in the University; provided that he has passed the previous examination of the University or of a University approved by the University.

O. 155. A candidate who is admitted to an examination admission of a further fee of Re.1/-, so granted shall show originally granted.

of the University examination fee,

The marks shall be supplied to a regular candidate through the principal of the college concerned and to a private candidate (i. e. ex student, teacher, inspector, librarian or a woman candidate) directly by post.

The marks will be supplied after the publication of the results of an examination.

The fee shall not be refunded except when a candidate dies before he finishes his part of the examination or is not permitted by the University to appear at the examination. In the case of a candidate whose examination fee is withheld under Ordinance 147 above, the fee for the supply of marks shall also be taken to have been automatically withheld for the examination in the ensuing year.

O. 157. (1) Any candidate who has appeared at an examination conducted by the University may apply to the Registrar for the scrutiny of his marks and the re-checking of his result. Such applications be made so as to reach the Registrar within two months from the date of the declaration of the results by the University.

(2) All such applications must be accompanied by a fee of Rs. 10/-.

(3) A candidate shall not be entitled to a refund of the fee unless his result is affected by the scrutiny.

(4) The result of the scrutiny shall be communicated to the candidate and the names of those candidates whose results are affected shall be published in the Rajasthan Gazette in a supplementary list.

O. 158. Duplicates of University certificates or diplomas shall not be granted except in cases in which the Syndicate is satisfied by the production of an affidavit on a stamped paper of Re. 1/- required by law for the time being in force that the applicant has lost his certificate or diploma, or that it has been destroyed, and that the applicant has a real need for a duplicate. In such cases a duplicate of a certificate may be granted on payment of a fee of Rs. 5/-.

O. 159. Any candidate who has been declared successful at a University examination after the declaration of his result, before the degree or diploma is delivered to him at the next convocation or otherwise, may apply to the Registrar for provisional certificate for passing that examination. The applications should come through the officer who forwarded the application of the candidate for appearing at the examination. A fee of Rs. 2/- should be remitted to the University office for the issue of the provisional certificate. If, however, the application does not come through the forwarding officer, a fee of Rs. 5/- must be sent with the application to the Registrar.

O. 160. A migration certificate shall, on application, be issued on payment of a fee of Rs. 5/- by the Registrar in cases where it is required for migration to other Universities.

O. 161. Duplicate copies of the following certificates shall be granted, provided the Registrar is satisfied that the original certificate was miscarried in post and did not reach the applicant or for any other bonafide reasons, on payment of a fee of annas eight in each case:—

- (1) Certified copy of marks.
- (2) Migration certificate.
- (3) Provisional certificate.

O. 162. Private candidates and ex-students shall not be allowed to take an optional paper prescribed in the syllabus, unless provision has been made for an examination in such paper of regular students attending affiliated colleges: Provided, however, that a private candidate or an ex-student who has once taken an optional subject in any examination of the University shall be allowed the same subject when he re-appears at any subsequent examination, within two years if that subject forms part of the syllabus.

O. 163. Ex-students shall be entitled to appear at the examinations of the University except those in the Faculties of Medicine & Pharmaceutics and Engineering & Technology without keeping terms; provided that if students have passed in practicals they may be allowed to appear in theoretical part only in the Faculty of Engineering & Technology.

O. 164. (1) An ex-student is one who has satisfied all the requirements of the prescribed course of studies at his college, including the necessary minimum attendance, and is certified by the principal as eligible for admission to an examination, and after certification does not join a college

(2) A student falling under the definition of ex-student under rule (1) shall be entitled to receive a certificate from the principal of the college last attended by him as mentioned in the said rule, whether or not he appears at the examination, in the year in which he is so certified.

(3) A student who has appeared at an examination and failed, shall not require a fresh certificate to be entitled to appear again at the same examination unless in the meantime he has joined a college.

(4) The principal of a college may by a certificate permit an ex-student, who joined his college, and thereby forfeited his status as an ex-student, to appear for an examination, if he is satisfied with the candidate's conduct and progress.

O. 165. Every candidate seeking permission to appear at an examination of the University under the above provisions without attending a regular course of study during the academical year in which the examination is held, shall be required—

- (i) to offer the same subjects in which he has attended a regular course of study in an affiliated college of the University.

Provided that a candidate for the B. A., B. Sc., or B. Com., Intermediate in Arts, Intermediate in Science or Intermediate in Commerce Examination may be allowed to change one of his optional subjects with the permission of the Vice-Chancellor, on the recommendation of the principal of the college concerned. Such an application for a change in the subject, duly recommended by the principal of the college concerned, must reach the Registrar not later than the 15th of August, preceding the examination at which the candidate wants to appear;

- (ii) to remain a student of the affiliated college in which he completed his course; and

- (iii) to submit through the principal of the college concerned an application in the prescribed form so as to reach the Registrar not later than the 1st of October, or by the 16th of October if accompanied by a late fee of Rs. 5/-, preceding the examination, stating—

- (a) the conditions under which he has been studying and is now proposing to continue his studies;
- (b) the dates of his previous failures to pass the examination.

The application shall be accompanied by a fee of Rs. 2/- and a marks fee of Re. 1/- as well as the fee prescribed for the examination. In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-,

O. 166. Every ex-student who wishes to appear at a subsequent examination shall pay such annual fee to his affiliated college to retain his membership of the college as the college may fix.

✓ **O. 167.** Notwithstanding anything contained in these Ordinances—

- (a) No candidate shall be admitted to an examination of the University unless he has passed the High School Examination of the University or the Intermediate Examination of the University or any other examination, recognized by the

University as equivalent thereto, in all the compulsory and optional subjects ordinarily required for such an examination; provided that a candidate who has passed an Oriental examination *recognised for the purpose by the Syndicate and also the High School Examination in English or the Intermediate Examination in English conducted by the University or examinations recognised as equivalent thereto, may be allowed, if otherwise eligible, to appear, as the case may be, one year after passing the High School Examination in English only or the Intermediate Examination in English only, at the Intermediate Examination of the University in English only or the B. A. Examination of the University in General English and English Literature only, and if successful, shall be given a certificate to that effect of passing the Intermediate Examination in English only or the B. A. Examination in English only.

*The following examinations are recognised for admission to the B. A. Examination—

- ✓ 1. The Shastri Examination of the Punjab University.
- ✓ 2. The Maulvi Fazl or the Munshi Fazl Examination of the Punjab University.
- ✓ 3. The Shastri or the Acharya Examination of the Government Sanskrit College, Banares.
- ✓ 4. The Fazl or the Kamil Examination conducted by the Department of Public Instruction, U. P.
- ✓ 5. The Acharya Examination conducted by the Department of Education, Jaipur State.
- ✓ 6. The Dabir-i-Kamil Examination of the Lucknow University.
- ✓ 7. The Shastri or Acharya Examination of the Banares Hindu University.
- ✓ 8. The Saraswati Examination of the Prayag Mahila Vidyapeetha, Allahabad.
- ✓ 9. Sahitya Ratana Examination of Hindi Sahitya Sammelan, Allahabad.

The following examinations are recognised for admission to Intermediate Examination—

1. Maulvi, Alim, Mulla (now defunct) and Fazl in Arabic and Munshi and Kamil in Persian conducted by the Education Department of the United Provinces, the Diploma Examinations in Arabic and Persian conducted by the Lucknow University and the Munshi (Proficiency in Persian), Munshi Alim (High Proficiency in Persian), Munshi Fazl (Honours in Persian), Maulvi (Proficiency in Arabic), Maulvi Alim (High Proficiency in Arabic), and Maulvi Fazl (Honours in Arabic), conducted by the Punjab University.
2. The Sanskrit examinations conducted by the Banares Government Sanskrit College, the Banares Hindu University, the Punjab University, the Education Department, Jaipur State and the Sanskrit Title Examination of the Calcutta Sanskrit Association.
3. The examination in advanced Urdu conducted by the Education Department of U. P. and Adib (Proficiency in Urdu), Adib-e-Alim (High Proficiency in Urdu), and Adib-e-Fazl (Honours in Urdu), conducted by the Punjab University.
4. The examination in advance Hindi conducted by the Education Department of U. P. and the Ratan (Proficiency in Hindi), Bhushana (High Proficiency in Hindi), and Prabhakar (Honours in Hindi), conducted by the Punjab University.
5. The Visbard (Madhyama) Examination held by the All India Sahitya Sammelan, Allahabad.
6. The Vidushi (Ordinary), Vidushi (Honours) and the Vidya-inodini Examinations held by the Prayag Mahila Vidyapeetha, Allahabad.

Provided further that a candidate who has passed the Alankar Examination of Gurukul University, Kangri, may be allowed, if otherwise eligible, to appear one year after passing the aforesaid examination, at the B. A. examination of the University in General English and English Literature and, if successful, shall be given a certificate of having passed the B. A. Examination in English only.

A candidate who desires to enter for an examination under this Ordinance, must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October, or October 16 if accompanied by a late fee of Rs. 5/-, or 1st December in case he is a college candidate preceding the date of examination. The application shall be accompanied by an examination fee of Rs. 8/- in the case of Inter. and of Rs. 15/- in the case of B. A. examination and a marks fee of Re. 1/-

(b) No graduate shall be admitted to a post-graduate examination of the University, unless he has passed the examination for the Bachelor's degree (B. A., B. Sc., or B. Com.) in all the compulsory and optional subjects ordinarily required for such an examination.

O. 168. Notwithstanding anything contained in these Ordinances, no member of the Syndicate or of a committee of studies shall be admitted to an examination of the University, except with the special permission of the Vice-Chancellor, provided this will not apply to a research degree.

O. 169. Notwithstanding any provision in any other Ordinance, the following sentence may be added in the diploma of any student who has done approved social service:—

“And has carried out approved social service work”

NOTE.—Such a sentence shall be added in the case of candidates for a degree who have been certified by the principals of their colleges to the effect that they have done definite social service work under the direction and control of members of teaching staff in such form and for such period as directed by the Syndicate.

O 169A. The work of social service shall be preceded by training for social service. The affiliated colleges shall therefore make arrangements for both. Two months period of social service, with two hours work per day, during a period of two sessions, may be deemed sufficient for making an entry in the diploma of a candidate.

O. 169B. The following forms of social service be recognised by the University:

1. Medical help, specially in rural areas;
2. Literacy drive;

3. Help rendered at the time of fairs in keeping sanitation, traffic control, recovery of lost children and property, rendering First Aid;

4. Adult education by instruction or educative entertainments etc., and

5. Such other forms of social service as may be suggested by the principal of a college and approved of by the Syndicate.

O. 169C. The social service work shall be carried on under the general guidance and direction of a member or members of the college staff and the principal of the college shall satisfy himself and the University that the candidate has rendered approved social service before recommending his case to the University. Except in the case of work in emergencies, the plan and programme of social service shall be submitted by the principal of the college in advance.

B—Fees.

Sec. 27. Subject to such conditions as may be prescribed by or under the provisions of this Act, the Statutes may, consistently with this Act, provide for all or any of the following matters; namely:—

.....

(6) fees to be charged for courses of study and curricula prescribed by the University, and for admission to its examinations, degrees and diplomas

S. 121. The following shall be the fees charged for the various University examinations, degrees and diplomas etc:—

Examination Fees—

	Rs.
Bachelor of Arts.	30.
Examination previous to Master of Arts	20.
Master of Arts	30.
Doctor of philosophy (Ph. D.)	150.
Bachelor of Education	50.
Bachelor of Science	30.
Bachelor of Science (in Agriculture)	30.
Examination previous to Master of Science	20.
Master of Science	30.
Intermediate Examination ...	Rs. 25/- by each candidate from a
(Arts or Science)	recognised institution.
Intermediate Examination	Rs. 30/- by each private candidate.
(Arts or Science)	
Intermediate Examination	Rs. 25/- by each candidate from a
in Commerce	recognised institution.

Intermediate Examination in Commerce	Rs. 30/- by each private candidate.
Intermediate Examination in Agriculture	Rs. 25/- by each candidate from a recognised institution.
Intermediate Examination in Agriculture	Rs. 30/- by each private candidate.
Teachers' Training Certificate Examination	Rs. 25/- by each candidate from a recognised institution.
Teachers' Training Certificate Examination	Rs. 30/- by each private candidate appearing in both Theory and Practice, and Rs. 20/- by each private candidate appearing either in Theory or in Practice.

	Rs.
Examination previous to LL. B.	20.
Bachelor of Laws	40.
Master of Laws, Part I	50.
Master of Laws, Part II	50.
Doctor of Laws	200.
Bachelor of Commerce	30.
Examination previous to Master of Commerce	20.
Master of Commerce	30.
I. Pharm. Part I	25.
I. Pharm. Part II	30.
B. Pharm. Part I	40.
B. Pharm. Part II	40.
B. Pharm. Part III	40.

For a part of any of the Pharmacy examinations, the same fee shall be charged as for the full examination regardless of the number of subjects.

	Rs.
First M. B., B. S.	25.
Second M. B., B. S.	15.
Final M. B., B. S. Part I	40.
Final M. B., B. S. Part II	50.
Re-examination in each subject of M. B., B. S. not exceeding the fee prescribed for the full examination.	15.
First Examination in Engineering.	50.
Second Examination in Engineering.	60.
Bachelor of Engineering.	70.
Supplementary B. A., B. Sc., B. Sc. (Ag.), B. Com. Examination.	30.
Supplementary B. E. Examination—same as for full examinations.	
Supplementary Intermediate Examinations.	

For appearing at an examination as an ex-student in addition to the regular examination fee.	Rs. 2.
For permission fee from a teacher, inspector, librarian or woman candidate in addition to the prescribed examination fees.	10.
For appearing in one subject at the B. A., B. Sc. or B. Com. Examination.	15.
For appearing in one subject at the Intermediate Examinations.	8.
For appearing in more than one subject at the Intermediate Examinations for each subject.	5.

Other fees.

S. 122. The following fees be paid in respect of the High School examination:—

- (1) High School Examination Rs. 20/- by each candidate from a recognised institution.
- (2) High School Examination Rs. 25/- by each private candidate.
- (3) Examination in one subject only Rs. 8/-.
- (4) Examination in more than one subject. Rs. 5/- for each subject
- (5) Fee for checking the result of failed candidates. Rs. 10/- per candidate.
- (6) Fee for checking the result of failed candidates appearing in one subject only. Rs. 4/- per candidate.
- (7) Fee for communicating the paper-wise marks in each subject obtained by a candidate at an examination. Re. 1/- per candidate.
- (8) Fee for communicating the paper-wise marks in one subject obtained by a candidate at an examination having appeared in that subject only. Re. 1/- per candidate.

C—Admission of Teachers, Librarians & Inspectors to University Examinations.

Sec. 4. The University shall have the following powers, namely:—

- (2) to hold examinations and to confer degrees and other academic distinctions upon—

- (c) Teachers in schools and colleges, inspecting officers in the departments of education and librarians in colleges, who are residing within the territorial jurisdictions of the University, and have passed examinations of the University under the conditions prescribed.

Teachers

O. 170. Whole-time teachers in schools and colleges, residing in the territorial jurisdiction of the University, will be eligible to appear at the examinations of the University, except the B. Ed., B. E., LL. B., Intermediate (Science), B.Sc. and M.Sc. (requiring practical work) I. Pharm., B. Pharm., and M. B., B. S. examinations, by permission of the Syndicate subject to the conditions laid down in these Ordinances.

O. 171. A teacher who desires to enter for an examination must submit his application, in a prescribed form (stating the subject or subjects in which he desires to present himself for the examination), so as to reach the Registrar not later than the 1st of October, or by 16th of October, if accompanied by a late fee of Rs. 5/-, preceding the examination and must send with his application the following:—

- (a) A certificate from the Head of the Education Department or the Principal of an affiliated college in which he is teaching, to the effect that immediately preceding the date of the examination at which he wishes to appear he will, unless his period of service is interrupted, have served continuously as a teacher for 18 months (in the case of the Intermediate B. A., B. Sc., or B. Com. Examination) or 8 months (in the case of the M. A. or M. Sc. (Mathematics) or M. Com. (Previous or Final) Examination) in one or more institutions maintained or recognised by the States in Rajputana, or the University of Rajputana,

and that before the commencement of such service he had passed the High School Examination of the University or an examination recognised by the University as equivalent to it, or the Intermediate Examination of the University, or an examination recognised by the University as equivalent thereto,

or B. A., B. Sc., or B. Com. Examination of the University or of some other Indian University recognized for the purpose by the Syndicate with full course prescribed for the degree; provided that with the special permission of the Syndicate, the period of 18 months' service required in the case of Intermediate B. A., B. Sc. or B. Com. Examination may be reduced to 8 months in the case of a teacher who has prosecuted a regular course of study in an affiliated college of the University for one full academical year, and has been promoted to the next higher class immediately before the commencement of his continuous service (unless the period of service is interrupted), in one or more of the above-mentioned institutions;

Provided further that service as an inspector under the provisions made in that respect will be added to the service as a teacher in computing the total period of service required hereinbefore:—

- (b) A certificate of character from the Head of the Education Department or the principal of an affiliated college in which he has taught during the period prescribed in clause (a);
- (c) An application fee of Rs. 10/- (in the case of examinations other than Intermediate) and a marks fee of Re 1/- together with the fee prescribed for the examination.

O. 172. Teacher candidates who already possess a post-graduate degree of some other University and desire to appear for examination of the same post-graduate degree of this University in the same subject or subjects in which they had taken their degree from that University, in all the papers (of previous and final) for the examination in one and the same year shall be allowed the concession of appearing as such, instead of first taking the previous and then the final examination, provided that the Master's degree was obtained after taking the Bachelor's degree with full course prescribed for the degree. This facility is extended for the M. A. or M. Com. degree only.

Candidates appearing under this Ordinance at the whole examination at one time shall have to pay a consolidated examination fee prescribed for the previous and final examinations viz. Rs. 50/- together with an application fee of Rs. 10/- and marks fee Re. 1/-.

O. 173. In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-.

O. 174. Before being admitted to the examination at which they have been permitted to appear under Ordinance 170 above, candidates shall be required to submit a certificate in a prescribed form under the signature of the proper authority mentioned under Ordinance 171 above to the effect that they have fulfilled the conditions laid down in regard to service in a recognised educational institution. Such certificate must reach the Registrar not later than 21 days and not before a month preceding the date of the commencement of the examination.

Inspectors

O. 175. Whole-time inspecting officers in the Departments of Education in the States of Rajputana will be eligible to appear at the examinations of the University, except the B. Ed., B. E., LL. B., Intermediate (Science), B. Sc. and M. Sc. (requiring practical work) I. Pham., B. Pharm. and M. B., B. S. Examinations, by permission of the Syndicate, subject to the conditions laid down in these Ordinances.

O. 176. An inspecting officer who desires to enter for an examination must submit his application in a prescribed form (stating the subject or subjects in which he desires to present himself for the examination), recommended by the Head of the Education Department so as to reach the Registrar not later than the 1st of October, or by 16th of October if accompanied by a late fee of Rs. 5/-, preceding the examination and must send with his application the following:—

- (a) A certificate from the Head of the Education Department of the State to the effect that immediately preceding the date of the examination at which he wishes to appear he will, unless his period of service is interrupted, have served continuously for 18 months (in the case of the Intermediate, B. A., B. Sc., or B. Com. Examination) or 8 months (in the case of the M. A. or M. Sc. (Mathematics) or M. Com. (Previous or Final) Examination) as an Inspecting Officer of the Education Department of a State in Rajputana,

and that before the commencement of such service he had passed the High School Examination of the University or an examination declared equiva-

lent to it, or Intermediate Examination of the University, or examination recognised by the University as equivalent thereto, or the B.A., B. Sc., or B. Com. Examination of the University or some other Indian University recognised for the purpose by the Syndicate with full course provided for the degree;

Provided that with the special permission of the Syndicate, the period of 18 months' service required in the case of Intermediate, B. A., B. Sc., or B. Com. Examination may be reduced to 8 months in the case of an Inspecting Officer who has prosecuted a regular course of study in an affiliated college of the University for one full academical year, and has been promoted to the next higher class immediately before the commencement of his continuous service (unless the period of service is interrupted).

Provided further that service as a teacher under the provisions made in that respect will be added to the service as an inspector in computing the total period of service required herein before;

- (b) A certificate of character from the Head of the Education Department;
- (c) An application fee of Rs. 10/- (in the case of examinations other than Intermediate) and a marks fee of Re. 1/-, together with the fee prescribed for the examination.

O. 177. Inspecting officers who already possess a postgraduate degree of some other University and desire to appear for examination of the same post-graduate degree of this University in the same subject or subjects in which they had taken their degree from that University in all the papers (of previous and final) for that examination in one and the same year shall be allowed the concession of appearing as such, instead of first taking the previous and then the final examination, provided that the Master's degree was obtained after taking the Bachelor's degree with full course prescribed for the degree. This facility is extended for the M. A. or M. Com. degree only.

Candidates appearing under this Ordinance at the whole examination at one time shall have to pay a consolidated examination fee prescribed for the previous and final examinations viz. Rs. 50/- together with an application fee of Rs. 10/- and marks fee Re. 1/-

O. 178. In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-.

O. 179. Before being admitted to the examination, at which they have been permitted to appear under Ordinance 175 above, candidates shall be required to submit a certificate, in a prescribed form with the signature of the proper authority mentioned under Ordinance 176 above to the effect that they have fulfilled the conditions in regard to service. Such certificate must reach the Registrar not later than 21 days and not before a month preceding the date of the commencement of the examination.

Librarians

O. 180. Whole-time librarians in recognised colleges who are graduates and possess a Diploma in Librarianship, will be eligible to appear at the examination of the University except the B.Ed., B.E., LL.B., B. Sc. and M. Sc. (requiring practical work) I. Pharm., B. Pharm., and MB., B.S. Examinations by permission of the Syndicate subject to the conditions laid down by these Ordinances.

O. 181. A librarian who desires to enter for a post-graduate examination (M. A., M. Sc., or M. Com) must submit his application in a prescribed form (stating the subject or subjects in which he desires to present himself for the examination) so as to reach the Registrar not later than the 1st of October, "or by 16th of October if accompanied by a late fee of Rs. 5/-, preceding the examination and must send with his application the following:—

- (a) A certificate from the principal of an affiliated college in which he is working as a librarian to the effect that immediately preceding the date of the examination at which he wishes to appear, he will, unless his period of service is interrupted, have served continuously as a librarian for 8 months (in the case of previous or final examination) in the colleges recognised by the University and that before the commencement of such service he had passed the B. A., B. Sc., or B. Com. Examination of the University or some other Indian University recognised for the purpose by the Syndicate with full course prescribed for the degree;
- (b) A certificate of character from the principal of an affiliated college in which the librarian is working during the period prescribed in clause (a);

- (c) An application fee of Rs. 10/- and a marks fee of Re. 1/- together with the fee prescribed for the examination.

O. 182. A librarian who already possesses a post-graduate degree of some other University and desires to appear for examination of the same post-graduate degree of this University in the same subject or subjects in which he had taken his degree from that University in all the papers (of previous and final) for that examination in one and the same year shall be allowed the concession of appearing as such, instead of first taking the previous and then the final examination; provided that the Master's degree was obtained after taking the Bachelor's degree with full course prescribed for the degree. This facility is extended for the M. A. or M. Com. degree only.

Candidates appearing under this Ordinance at the whole examination at one time shall have to pay a consolidated examination fee prescribed for the previous and final examinations viz. Rs. 50/-, together with an application fee of Rs. 10/- and marks fee of Re. 1/-.

O. 183. In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-.

O. 184. Before being admitted to the examination at which he has been permitted to appear under Ordinance 180 above, the librarian shall be required to submit a certificate in a prescribed form under the signature of the proper authority mentioned under Ordinance 181 above to the effect that he has fulfilled the conditions laid down in regard to service in a recognised college. Such certificate must reach the Registrar not later than 21 days and not before a month preceding the date of the commencement of the examination.

D.—Admission of Women Candidates to University Examinations.

O. 185 The Syndicate may grant permission to women candidates residing within the territorial limits of the University to appear at the examinations of the University, except the B. Ed., LL. B., I. Pharm., B. Pharm., M. B., B. S. and B. E. Examinations, without their attending a regular course of study in an affiliated college.

O. 186. A woman candidate who desires to enter for an examination must submit her application in a prescribed form through the principal of an affiliated college or the Head of the Education Department

of a State within the jurisdiction of the University, so as to reach the Registrar not later than the 1st of October or by 16th of October if accompanied by a late fee of Rs. 5/, preceeding the examination. The candidate must state in the application the subject or subjects in which she desires to present herself for an examination specify the arrangements which she has made for her study in preparation therefor. An application fee of Rs. 10/- (in the case of examinations other than Intermediate) and a marks fee of Rs. 1/-, together with the fee prescribed for the examination, must accompany the application.

O. 187. Each such application will be considered and disposed of by the Syndicate on its own merits, provided that permission shall not be granted for appearing at—

- (a) the Intermediate, or B. A., or B. Sc. Examination, unless two years have elapsed since the candidate passed the High School or Intermediate Examination of the University, as the case may be, or an examination, recognised by the University as equivalent thereto;
- (b) the M. A. Previous or M. Sc. Previous or M. Com. Previous Examination, unless one year has elapsed since the candidate passed the B. A. or B. Sc. or B. Com Examination of the University or of an Indian University recognised for the purpose by the Syndicate with full course prescribed for the degree;
- (c) the M. A. Final or M. Sc. Final or M. Com. Final Examination, unless one year has elapsed since the candidate passed the M. A. Previous or M. Sc. Previous or M. Com. Previous Examination of the University.

O. 188. Candidates who fail in the Annual Promotion Examination of the First or Third year class of a college and are detained in that class, shall not be permitted to appear at the next ensuing Intermediate or B. A. Examination, as the case may be.

O. 189. A woman candidate who already possesses a post-graduate degree of some other University and desires to appear for examination of the same post-graduate degree of this University in the same subject or subjects in which she had taken her degree from that University in all the papers (of previous and final) for that examination in one and the same year shall be allowed the concession of appearing as such, instead of first taking the previous and then the final examination

provided that the Master's degree was obtained after taking the Bachelor's degree with full course prescribed for the degree. This facility is extended for the M. A. or M. Com. degree only.

Candidates appearing under this Ordinance at the whole examination at one time shall have to pay a consolidated examination fee prescribed for the previous and final examinations viz. Rs. 50/- together with an application fee of Rs. 10/- and marks fee Re. 1/-.

O. 190. Candidates shall not be allowed to offer Science subjects for any examination of the University, unless they produce satisfactory evidence that they have completed a course of instruction in practical Science in an affiliated college during the year preceding the examination.

O. 191. In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-.

O. 192. Before being admitted to the examination at which they have been permitted to appear under Ordinance 185 above, candidates shall be required to submit a certificate in prescribed form under the signature of the proper authority mentioned under Ordinance 186 above, to the effect that they have fulfilled the conditions in regard to residence within the territorial jurisdiction of the University. Such certificate must reach the Registrar not later than 21 days and not before a month preceding the date of the commencement of the examination.

E.—Admission of External Students to University Examinations

O. 192 A. External students residing in the territorial jurisdiction of the University will be eligible to appear at the Bachelor degree examinations of the University in Faculties of Arts & Commerce only. Such should be in all respects subject to the conditions laid down by the University for internal students, e. g. enrolment, eligibility, fees, attendance etc. etc, (including courses of study and standard of passing) except in so far as herein provided.

O. 192 B. A candidate desiring to appear at an examination as an external student must get himself enrolled in the University at least 18 months before appearing at the University examination.

O. 192 C. No candidate who is enrolled in a college or at the University for an examination as a full-time regular student shall be registered as an external student for that examination.

O. 192 D. Enrolment as an external student shall be open to such persons only as are gainfully employed within the University area.

O. 192 E. Enrolment as an external student shall be valid only for the examination for which the enrolment is obtained. A candidate will not be required to re-enrol himself, if he fails at the examination, for re-appearing in the same.

O. 192 F. The degree or diploma awarded to external students shall be distinguished by the words "passed as an external student".

O. 192 G. Evening classes for an examination for external students shall be introduced in such affiliated degree and post-graduate colleges only as are affiliated for that particular standard.

O. 192 H. The evening classes shall be subject to the control and inspection of the University.

O. 192 I. The teaching work done by teachers of a college under the regular college time-table in addition to the teaching work done by them in its evening classes for external students, shall not exceed the maximum period of working as provided under the Ordinances of the University. Such teachers as offer their services for working in the evening classes may, however, be allowed one period a day extra which should be the maximum work which a teacher in the evening classes should be required to put in.

F.—Supplementary Examinations.

O. 193. There shall be in the month of August a supplementary examination of candidates who fail in one subject only at the immediately preceding Intermediate, B. A., B. Sc., B. Com. Examinations and such candidates, as may desire to take the supplementary examination, may be provisionally permitted at their own risk to join the next higher class in an affiliated college of the University and count attendance in case they are successful at the supplementary examination

The attendance of candidates who join the next higher class on the declaration of the result of the supplementary examination, and of those who, having failed at the supplementary examination, rejoin a college, may be calculated from the date of admission but not later than a week after the declaration of the supplementary examination result.

O. 194. Candidates shall be declared to have passed the examination if they secure the minimum pass marks as prescribed for the original examination in the subject in which they appear at the Supplementary Examination. No division shall, however, be awarded to such candidates.

O. 195. There shall be a supplementary examination in the month of August of candidates who fail at the immediately preceding

LL. B. previous or LL. B. final examination and only such candidates as:—

(a) have failed in one paper only or in the aggregate or in both i. e. in the aggregate and also in one paper; and

(b) have obtained not less than 48% marks in the aggregate of the six papers in which they have passed, or in the case of candidates failing in aggregate only, 48% marks in the aggregate of the 6 papers excluding the paper in which they have secured the lowest marks;

shall be admitted to the supplementary examination in one paper only in which they have failed or in the case of the candidates failing in aggregate only, in the paper in which they have obtained the lowest marks.

In order to be declared successful at the supplementary examination a candidate must obtain at least 48% aggregate marks in the paper in which he has appeared at the examination.

No division shall be awarded to the candidate declared successful at the supplementary examination.

Candidates who desire to take the supplementary examination for the previous LL. B. may be permitted to join provisionally, at their own risk, the final LL. B. class in a college affiliated to the University and their attendance during the period of their provisional admission shall be counted if they are declared successful at the supplementary examination. The attendance of the candidates who join a class after appearing at the supplementary examination may be calculated from the date of admission but not later than a week after the declaration of the supplementary examination results.

O. 196. Candidates shall be required to pass separately in (i) the written papers and (ii) the practical and oral examination, if any, provided for in the scheme of examination, in the subject.

O. 197 A candidate who desires to enter for an examination under these Ordinances must submit his application direct to the Registrar in a prescribed form so as to reach him not later than the 25th of July each year. The application shall be accompanied by the full fee for the examination and the marks fee of Re. 1/-.

O. 198. The list of candidates eligible to appear at the supplementary examination shall be published along with the main results of the examination concerned.

G.—Appointment of Examiners.

Sec. 34. (1) Examiners shall be appointed by the Syndicate on the recommendation of the Committee for the Selection of Examiners.

(2) If any examiner is unable to act for any cause and a fresh appointment cannot be made in time in the manner prescribed by sub-section (1), the Vice-Chancellor shall have power to appoint another examiner to fill the vacancy and shall communicate such appointment to the Syndicate.

(3) The Syndicate shall not make any change in the recommendations made by the Committee with regard to the appointment of examiners except after recording specific reasons for any such change.

(4) The Committee for the selection of examiners in each subject or a group of allied subjects shall consist of—

- (i) the Vice-Chancellor;
- (ii) the Dean of the Faculty concerned;
- (iii) the Convener of the Board of Studies concerned; and
- (iv) one member other than a Convener of the Board of Studies concerned to be elected by the Board every year.

S. 25. (1) No person shall be qualified for appointment as an examiner in a subject for any examination unless he—

- (a) has taught the subject for at least three years upto the standard of the examination and possesses five years' teaching experience in that subject; or
- (b) has had five years' experience, as an examiner in the subject, of the standard of the examination concerned.

Explanation—Teaching or examining experience in any Indian University established by law shall be counted for the purpose of this sub-statute.

(2) (a) Each Board of Studies shall prepare a panel consisting of—

- (i) all qualified internal examiners, and
- (ii) as many external examiners as may be needed for conducting examinations of the University for a period of five years, in each subject for each examination upto and inclusive of the examination for the Master's degree. The Committee for the selection of examiners shall select examiners in rotation from out of the panel and no examiner outside the panel shall be appointed unless and until a person within

the panel is not available or cannot be appointed in accordance with the provisions hereinafter contained.

(b) The panels shall ordinarily be revised once in five years and such of the persons in the previous panels as have not got a chance of acting as examiners during the last quinquennium shall be given preference over others in the revised panels.

(c) This sub-statute shall not apply to examiners for a Doctor's degree.

(3) Excepting for examinations in the Faculty of Medicine and Pharmaceutics and of Engineering and Technology—

(a) no person shall be appointed examiner for any examination upto and inclusive of the Intermediate Examination for more than two years consecutively; and for the degree and post-graduate examinations for more than three years consecutively; and

(b) before a person, who has been appointed as an examiner for one year or if continued under clause (a) for two or three years consecutively is again appointed as an examiner, there shall be a gap of at least four years in the case of examinations upto and inclusive of an examination for the Bachelor's degree, and of at least two years in the case of an examination for the Master's degree:

Provided that of the persons who have acted in any one year as co-examiners only one-half shall be replaced for the next year.

(4) Excepting as aforesaid no person shall be examiner in more than one paper in any one year in the University.

Explanation.—"Paper" includes a "Practical".

Exception.—An examiner in an examination for the M. Sc. degree may be appointed for one paper and one practical alongside.

(5) Not more than one person from the same college, school or institution shall be appointed as an examiner in a particular subject for a particular examination:

Provided that this condition may be relaxed, where necessary, in the case of post-graduate examinations.

(6) No person who is himself appearing in any written examination of the University shall be appointed as an examiner for

any examination of the University in the year in which he is so appearing. When any person is appointed as an examiner in any year, he shall forthwith inform the Registrar whether he intends so to appear.

(7) No person shall be appointed as a paper setter in any subject for an examination at which any of his near relations intends to appear in that year. Every paper setter shall, as soon as may be, after his appointment has been made, communicate to the Registrar, if any such relation intends so to appear.

(8) The maximum number of answer-books allotted to any examiner in the University in any one year shall not exceed three hundred.

(9) Except in the case of the High School and Intermediate Examinations—

- (a) there shall be at least one external examiner in an examination for a subject having more than one paper;
- (b) in the case of Law examinations, there shall be external examiners in the proportion of about one-third of the total number of examiners; and
- (c) in the case of examinations for the Doctor's degree, there shall be external examiners in the proportion of about two-thirds of the total number of examiners.

(10) For the M. Sc. Examination, in subjects other than Mathematics, the head of a post-graduate department in an affiliated college shall be one of the examiners for the students of that college appearing at the examination. The provisions of this sub-statute shall be given effect to notwithstanding anything herein contained.

(11) The Syndicate may, on the recommendation of the Committee for the selection of examiners, after recording its reasons in writing, waive the provisions of sub-statutes (3) to (10) in exceptional cases.

Explanation—In these statutes, “examiner” includes “co-examiner” except in so far as there is anything repugnant in the subject or context.

Sec. 41 *Members of the Syndicate not to get remuneration.*—No member of the Syndicate shall get any remuneration for any work done by him for the University, whether as an examiner or as a tabulator. If, however, a member of the Syndicate is specially invited to become an examiner, the maximum amount of remuneration payable to him shall not exceed one hundred rupees.

H-Remuneration to Examiners.

S. 123. The following is the scale of remuneration allowed to the examiners:—

1. Degree and Postgraduate Examinations.—

For setting each question paper in M. A. (Previous and Final), M. Sc. (Previous and Final), M. Com. (Previous and Final) and LL. M. Examinations	....	...	Rs. 75	As. 0
For marking each answer-book in above	....	...	2	0
For examining each candidate <i>viva voce</i> in M. A. Final Examination (with minimum fee of Rs. 50/- to each examiner)	2	0		
For reading the thesis of M. A. (Final) in Economics and conducting a <i>viva voce</i> on the thesis to each examiner	...	15	0	
*For the Practical examination of each candidate in M. Sc. (Previous and Final) Examination with a minimum fee of Rs. 100/- to each examiner for each centre	..	...	2	0
For reading the theses in M. Sc. Final Examination in Chemistry, Botany and Zoology to each of the two examiners	....	...	15	0
For reading the thesis in Ph. D.	...	...	75	0
For Practical and <i>viva voce</i> Examination in Ph. D.	...	...	75	0
NOTE —When an examiner who takes the practical and <i>viva voce</i> examination is also one of the examiners for the thesis, he shall be paid for both				
	...	...	100	0
For setting each question paper in B. A., B. Ed., B. Sc., B. Sc. (Ag.), B. Com., and LL. B. (Previous and Final) Examinations	...	...	40	0
For marking each answer-book in above	...	...	1	4
For setting question paper in B. Sc. Chemistry Practical	...	...	50	0
For Practical examination of each candidate in the B. Sc., B. Sc. (Ag.), B. A., (Experimental Psychology) Examinations (with a minimum fee of Rs. 40/- for each college)	...	...	1	4
To the head examiner in each Practical examination in Science	...	Rs. 10/- per one hundred candidates with a mini- mum fee of Rs. 50/- for the whole work.		

... .. fee of Rs. 100/- to each examiner is for conducting both the
... .. examinations and not for each Examination and
... .. examination, whether conducted on paper or
... ..

For practical examination of each candidate for the B. Ed. Examination (with a minimum of 100/- to each examiner) for each centre	Rs. 2	As. 0
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The Head examiner in any paper for any examination shall receive Rs. 50/- extra in respect of each co-examiner (if any). This sum will include the remuneration for re-examining twenty-five marked answer-books received from each co-examiner.

For First, Second and Final M. B., B. S. (Part I and Part II)

<i>Examinations:—</i>				Rs.	As.
(a) For setting each question paper	...			40	0
(b) For marking the answer-books of each candidate in a full paper	...	...	...	1	4
(c) For Practical and Clinical examination including <i>viva voce</i> per candidate, to each examiner—					
(i) In Anatomy, Physiology and Pharmacology (with a minimum of Rs. 100/- for the external examiner)	...	...	...	2	0
(ii) In Pathology, Medicine, Surgery, Ophthalmology, and Midwifery (with a minimum of Rs. 150/- for Pathology, Ophthalmology, and Midwifery, and with a minimum of Rs. 200/- for Medicine and Surgery, for the External examiner)	...	...	...	3	0
(iii) In Hygiene and Medical Jurisprudence (with a minimum of Rs. 75/- for the External examiner)...				1	8

For B. Pharm. Parts I, II, & III Examinations—

(a) For setting each question paper...	...	...	...	40	0
(b) For marking the answer-book of each candidate in a paper or part of it	...	...	...	1	4
(c) For practical examinations including <i>viva voce</i> per candidate to each examiner (Internal and External each)	...	...	...	1	4
					per candidate per subject with a minimum of Rs. 50/-

For Bachelor of Engineering Examinations—

	F. E.	S. E.	B. E.
For setting each question paper	Rs. 45/-	Rs. 60/-	Rs. 60/-
For marking each answer-book	Rs. 1/4/-	Rs. 1/8/-	Rs. 2/-

F. E.

For Practical examination (including viva-voce & sessional course work) in each practical subject, per candidate, per examiner (with a minimum fee of Rs. 40/- to each examiner).... Rs. 1/4/-

S. E.

For practical examination including viva-voce & sessional work) in each practical subject per candidate per examiner (with a minimum of Rs 40/- to each examiner) .. Rs. 1/8/-

B. E.

For practical examination (including viva-voce & sessional course work) in the Mechanical Engineering Laboratory or Electrical Engineering Laboratory per candidate, per examiner, (with a minimum of Ra. 40/- to each examiner) ... Rs. 2/-/-

For practical examinations (including viva-voce & sessional course work) in (a) Mechanical Engg. Design (b) Structural Engg. Design (c) Electrical Engg. Design (d) Installation Design, per candidate per examiner (with a minimum of Rs. 40/- to each external examiner) Rs. 5/-/-

II. Intermediate Examination in Arts, Science, or Agriculture—

1. For setting a full paper ... Rs. 35/.

2. For marking each answer paper... Re. 1/-
3. For marking each answer paper in the additional optional paper in General knowledge ... Rs. -/8/-.
4. For the practical examination in Science or Agriculture (to the external examiners only) ... Re. 1/- per candidate with a minimum fee of Rs. 30/- per college.
5. For practical Examination in Music ... Re. 1/- per candidate with a minimum fee of Rs. 30/- per college.
6. To the head examiner, in addition to the fee for marking answer papers ... Rs. 30/- to be paid in respect of each sub-examiner (if any), working under him, no additional fee being paid for re-examining marked answer-books received from sub-examiners or for supplying models to them. At least ten models should be supplied to each sub-examiner.
7. For translating a paper ... Rs. 20/-
8. To the head examiner in each practical examination in Science or Agriculture ... Rs. 10/- per one hundred candidates with a minimum fee of Rs. 50/- for the whole work.

III. Intermediate Examination in Commerce:—

1. For setting a paper ... Rs. 35/-.
2. For marking each answer-paper... Re. 1/-

IV. Intermediate Examination in Pharmacy Parts I & II:—

1. For setting each question paper. Rs. 35/-
2. For marking each answer-book or part of it. ... Re. 1/-
3. For practical examination including *viva-voce* per candi-

date to each examiner (internal & external each) ... Re. 1/- per candidate per subject with a minimum of Rs. 20/- in the case of Part I and with a minimum of Rs. 30/- for Part II.

V. Teachers' Training Certificate Examination:—

1. For setting a paper ... Rs. 35/-
2. For marking each answer-book... Re. 1/-
3. For Practical Examination ... Re. 1/- per candidate with a minimum fee of Rs. 30/- for each institution.

VI. High School Examination:—

1. For setting a paper ... Rs. 25/-
2. For setting a paper in Urdu Shikast ... Rs. 10/-
3. For marking each answer-book Rs. -/8/-
4. For marking Shikast Sheets ... Rs. 15/- per one hundred candidates.
5. For Practical examination per candidate ... Re. 1/- with a minimum fee of Rs. 20/- for each institution.
6. To the head examiner, for checking practical work done by sub-examiners ... Rs. 10/- per one hundred candidates.
7. To the head examiner, in addition to the fee for marking answer papers or setting questions ... Rs. 20/- on the same condition as in the Intermediate.
8. For translating a paper ... Rs. 15/-

VII. Tabulation and checking:—

1. To Tabulators for tabulating the results of candidates. ... Rs. 30/- per hundred candidates.
2. To Checkers for checking the results of candidates. ... Rs. 15/- per hundred candidates.

3. To Cross-checkers for checking the results of candidates. ... Rs. 15/- per hundred candidates.

I-Examination Results

Sec. 22. Syndicate—Functions.

(i) to arrange for the holding of examinations and publishing results thereof.

Sec. 34B. Results Committee.—There shall be a Results Committee for declaration and publication of the results of University examinations. The Committee shall consist of the following, namely:—

- (i) the Vice-Chancellor;
- (ii) the Director of Education in Rajasthan;
- (iii) the Registrar;
- (iv) the Dean of the Faculty concerned; and
- (v) one member nominated by the Vice-Chancellor every year.

O. 199. The examinations results of the University shall be published in the Rajasthan Gazette.

CHAPTER XXXI

EXAMINATIONS—FACULTY OF ARTS.

A-Ordinances for admission of students to the examinations of the Faculty.

INTERMEDIATE EXAMINATION IN ARTS.

O 200. Before entering upon the course of study prescribed for the Intermediate Examination in Arts, every candidate shall be required to have passed either (a) the High School Examination of the University or (b) to have passed the High School Vocational Examination and the remaining compulsory subjects and the remaining additional paper in English prescribed for the High School Examination or (c) to have passed an examination which by Regulations is declared equivalent to the High School Examination of the University.

O. 201. No candidate shall be admitted to the Intermediate Examination in Arts unless two academical years shall have elapsed since the date of his passing the High School or an equivalent examination: provided that candidates, who have passed the Cambridge School Certificate (Senior-Local) Examination in five such subjects as are recognised for the High School Examination of the University, may be admitted to the Intermediate Examination in Arts in the Academical year following that in which they pass the Cambridge School Certificate Examination.

O. 202. Every candidate for the Intermediate Examination in Arts shall be examined in English and any three of the following subjects:—

- (1) Mathematics.
- (2) Drawing.
- (3) Economics.
- (4) Civics.
- (5) History and Allied Geography.
- (6) Histories of Greece and Rome & Allied Geography.
- (7) Geography.
- (8) Logic.
- (9) A modern Indian Language (Urdu, Hindi) or a Modern European Language (German or French)
- (10) A classical Language, Viz., Sanskrit, Arabic, Persian, Latin, Greek, or Hebrew.
- (11) Physiology, Hygiene and Child study (for girls only)
- (12) Music.
- (13) Military Training.

O. 203. A candidate, who has passed the Intermediate Examination in Arts or Science of the University, or that of Ajmer Board before 1948, may appear at a subsequent Intermediate in Arts examination or examinations conducted by the University in one or more optional subjects in which he has not previously passed the Intermediate Examination.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by the 16th of October, if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of examination. The application shall be accompanied by the examination fee prescribed and a marks

fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-

BACHELOR OF ARTS.

O. 204. A candidate, who after passing the Intermediate Examination of the University in Arts, Science or Commerce, or any other examination recognised by the University as equivalent thereto, has attended a regular course of study in an affiliated college for two academical years, shall be eligible for appearing at this examination.

O. 205. The examination shall be conducted by means of papers and may include a *viva voce* or a practical examination.

O. 206. Every candidate shall be required to show a competent knowledge of—

- (i) General English; and
- (ii) Any three of the following branches of study:—
 - (a) English Literature.
 - (b) Latin, Greek, Hebrew, Arabic, Persian or Sanskrit.
 - (c) Hindi, Urdu, French, German or Italian.
 - (d) Mathematics.
 - (e) Philosophy.
 - (f) Economics.
 - (g) History.
 - (h) Political Science.
 - (i) Geography.
 - (j) Indian Music.
 - (k) Drawing and Painting.
 - (l) Home Science.
 - (m) Sociology.
 - (n) Military Science.
 - (o) Archaeology.

O. 207. Any candidate who has passed the B. A., B. Sc. or B. Com. Examination of the University or the B. A., B. Sc., or B. Com.

Examination of the University of Agra before the Examination of 1948, shall be allowed to present himself for examination in any one of the subjects prescribed for the B. A. Examination and not taken by him at the degree examination and, if successful, will be given a certificate to that effect.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by the 16th of October, if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of examination. The application shall be accompanied by an examination fee of Rs. 15/- and a marks fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-.

O. 208. A candidate may, at his option, take Military Science as an extra subject. The marks obtained by the candidate shall not be counted towards his aggregate and the class obtained by him in Military Science shall be indicated in his diploma and notified in the Rajasthan Gazette. The minimum number of lectures in Military Science, that would be delivered to candidates who offer it as an extra optional subject, shall be 100 for a two years course and 50 for failures and detained candidates.

O. 209. No candidate shall be allowed to offer Military Science as an optional or extra optional subject for the B. A. Examination, unless he has had previous military training for at least two consecutive sessions.

MASTER OF ARTS.

O. 210. The examination for the degree of Master of Arts shall consist of two parts—

- (1) the Previous Examination, and
- (2) the Final Examination.

O. 211. A candidate who, after taking his Bachelor's Degree of the University, or of an Indian University recognised for the purpose by the Syndicate with full course prescribed for the degree has completed a regular course of study in an affiliated college for one academical year,

shall be admitted to the Previous Examination for the degree of Master of Arts:

Provided that a B. Sc. shall not be admitted to the Previous Examination for the degree of Master of Arts in Mathematics.

— **O. 212.** A candidate who, after passing the Previous M.A. Examination of the University or that of Agra University before the year 1948, has completed a regular course of study for one academical year in an affiliated college, shall be admitted to the Final Examination for the degree of Master of Arts

O. 213. The subject of the examination shall be one of the following:—

- (1) A Language.
- (2) Philosophy.
- (3) History.
- (4) Mathematics
- (5) Economics.
- (6) Political Science.
- (7) Geography.

O. 214. The examination in Languages shall be in one of the following languages, viz. English, Sanskrit, Arabic, Persian, Greek, Latin, Hebrew, Hindi, Urdu, French, German or Italian.

O. 215. Any candidate who has passed the M. A. Examination of this University or that of Agra University before 1948 in any subject shall be allowed to present himself for examination in any one or more of the optional papers in that subject not taken by him at the said examination and, if successful, will be given a certificate to that effect.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by 16th of October if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of the examination. The application shall be accompanied by an examination fee of Rs. 15/- and a marks fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-

B—SCHEME OF EXAMINATIONS.

R. 10

Intermediate Examination in Arts.

First Division 60 per cent }
 Second Division 45 per cent } of the aggregate marks.
 Third Division 33 per cent }

For distinction 75% of the aggregate marks in a subject shall be the minimum.

English

Paper I	Prescribed Prose and Unseen*	3 hrs. 50	} Minimum Pass Marks 50
Paper II	Prescribed Poetry & Unseen*	„ 50	
Paper III	Translation and Composition (in the case of candidates offer- ing English as mother tongue or whose mother tongue is other than the Vernaculars—Hindi, Urdu, Marathi, Bengali or Gujrati—Essay)	„ 50	
†Additional optional paper in English on General Knowledge (one hour paper)		100	} Minimum Pass Marks. 33

Sanskrit

Paper I	Poetry and Drama	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Prose and Grammar	„ 35	
Paper III	Composition, Supplementary Reading and Translation.	„ 30	

Arabic and Persian

Paper I	Poetry and Supplementary Reading	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Prose and Supplementary Reading	„ 35	
Paper III	Grammar, Translation & Composition,,	30	

*In Place of the unseen passages, candidates, who offer English as their mother-tongue, will be required to answer questions on supplementary prescribed text

In the case of candidates who offer English as their mother tongue or whose mother tongue is other than the vernaculars—Hindi, Urdu, Marathi, Bengali or Gujrati the third paper in English will consist of an essay together with the Questions on English Composition and the History of English Literature.

†The result in this paper shall not affect the result and division of the candidates, but in case a candidate passes in this paper and declared successful at the examination an entry will be made to this effect in his certificate. The candidates will have the option to answer this paper through Hindi Medium with effect from the Examination of 1951.

Latin, Greek & Hebrew

Paper I	Poetry and Unseen	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Prose and Unseen	" 35	
Paper III	Grammar, Translation and Composition.	" 30	

Hindi

Paper I	Prose and Drama	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Poetry, Alankars and Meter	" 35	
Paper III	Composition, Supplementary Reading and Translation.	" 30	

Urdu

Paper I	Prescribed Prose and Grammar	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Prescribed Poetry, Rhetoric & Meter	" 35	
Paper III	Composition, Supplementary Reading and Translation.	" 30	

Modern European Language (French)

Paper I	Prose and Grammar	3 hrs. 35	} Minimum Pass Marks 33
Paper II	Poetry, Rapid Reading and Unseen.	" 35	
Paper III	French Composition.	" 30	

History & Allied Geography

Paper I.	Indian History from the earliest times to 1707 A. D. or Indian History. History from 1707 to 1919.	3 hrs. 50	} Minimum Pass Marks 33.
Paper II.	Outlines of Modern European History from 1500 AD to 1919, or English Modern English History from History. 1485 A.D. to 1919.	3 hrs. 50	

**Histories of Greece and Rome
and Allied Geography**

Paper I.	History of Greece	3 hrs. 50	} Min. Pass Marks 33.
Paper II.	History of Rome.	3 hrs. 50	

Geography

Paper I.	3 hrs. 50	} Min. Pass Marks
Paper II.	3 hrs. 50	

Logic

Paper I.	Deductive Logic.	3 hrs. 50	} Minimum Pass Marks 33.
Paper II.	Inductive Logic or Educational Psychology.	3 hrs. 50	

Economics

Paper I.	3 hrs. 50	} Min. Pass Marks 33.
Paper II.	3 hrs. 50	

Mathematics

Paper I.	Algebra and Trigonometry.	3 hrs. 33	} Minimum Pass Marks 33.
Paper II.	Analytical Geometry & Elementary Calculus.	3 hrs. 33	
Paper III.	Elementary Statics & Dynamics	3 hrs. 34	

Drawing

Paper I.	Object Drawing.	3 hrs. 35	} Minimum Pass Marks 33.
Paper II.	Advanced Design.	3 hrs. 35	
Paper III.	Solid Geometrical Drawing	3 hrs. 30	

Civics

Paper I.	Civics Theory.	3 hrs. 50	} Minimum Pass Marks 33.
Paper II.	Indian Civic life and Administration.	3 hrs. 50	

Music

Theory	3 hrs 36	} Min. Pass Marks 12.
Practical	(30 minutes per candidate)	64	

**Physiology, Hygiene and Child Study
(for female candidates only)**

Paper I.	35	} Minimum Pass Marks 33.
Paper II.	.....	35
Practical	. ....	30

Military Training

Paper I.	.....	30	} Minm. Pass Marks 20.
Paper II.	.....	30	
Practical Test	.....	40	} Minm. Pass Marks 13.

R. 11.

B. A. Examination.

First Division 60 per cent } of the aggregate marks.
 Second Division 45 per cent }

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

A candidate is required to pass in two papers combined and also in the Practical Examination in Military Science.

General English

Paper I	Essay and Unseen	...50	} Minimum Pass
Paper II	Questions on books prescribed for general study	...50	
			Marks 33

NOTE—In Paper II, there shall be no question of a purely literary nature or requiring detailed knowledge.

English Literature

Paper I	Shakespeare and Drama.	...50	} Minimum Pass
Paper II	Poetry	...50	
Paper III	Prose	...50	Marks 50

NOTE—In English the medium of instruction and examination shall be English.

Latin, Greek and Hebrew

Paper I	Prose Authors	...50	} Minimum Pass
Paper II	Poetry Authors	...50	
Paper III	Composition and Grammar	...50	Marks 50

Arabic and Persian

Paper I	Prose and Grammar	...50	} Minimum Pass
Paper II	Poetry, History of Literature and Figures of Speech etc.	...50	
Paper III	Rapid Reading and Translation from English into Language	...50	Marks 50

NOTE—For Urdu The question shall have the option of Persian or Urdu, unless

Sanskrit

Paper I	Poetry and Drama	.. 50	} Minimum Pass
Paper II	Prose, History of Sanskrit Literature and <i>either</i> Rhetoric or Elements of Hindu Culture	...50	
Paper III	Composition, Translation and Rapid Reading	...50	Marks 50

NOTE—1. (a) General questions on Grammar shall be set in papers I and II only and marks not more than 10% of marks in each paper will be allotted to them.

(b) Marks in Paper II shall be distributed as follows:—

Prose ...	...	20
Alankars or Elements of Hindu Culture ...	...	15
History of Sanskrit Literature ...	...	15

(c) Marks in Paper III shall be distributed as follows —

Composition or Essay ...	...	15
Translation ...	...	15
Rapid Reading ...	...	20

NOTE—2. Instruction in Sanskrit shall be conducted in English or Hindi. The question papers shall be set in English only, but the candidates shall have the option of answering the questions in English, the language concerned or Hindi unless otherwise specified by the Examiner.

Modern Indian Languages

NOTE—In the Modern Indian Languages the medium of instruction shall be the language concerned.

Hindi

Paper I. Prose and Drama Texts	...50	} Minimum pass marks 50
Paper II. Poetry Texts	...50	
Paper III. Translation and Composition	...50	

NOTE—Questions on the General History of Literature, Rhetoric and Criticism of the authors studied will be set in the Papers I and II.

Urdu

Paper I. Prose Texts	...50	} Minimum pass marks 50
Paper II. Poetry Texts	...50	
Paper III. Translation and Composition:	...50	

NOTE—Questions on the General History of Literature, Rhetoric and Criticism of the authors studied will be set in the Papers I and II.

Modern European Languages

Viz. French, German and Italian

Paper I. Selected Modern Text	...50	} Minimum pass marks 50
Paper II. Outlines and Literary History and Special Period	...50	
Paper III. Unseen and Essay	50	

Mathematics

Same as for B. Sc.

Paper 1. Algebra, Geometry and Trigonometry	...50	} Minimum pass marks 50
Paper II. Differential and Integral Calculus and Differential Equations	...50	
Paper III. Statics, Dynamics and Hydrostatics..	50	

Philosophy

Paper I.	General Psychology	...50	} Minimum pass marks 50
Paper II.	Ethics	...50	
Paper III.	Metaphysics	...50	
	(Western Metaphysics and Indian Philosophy)		

Economics

Paper I.	Economic Theory	...50	} Minimum pass marks 50
Paper II.	Currency, Banking and Public Finance	...50	
Paper III.	Indian Economic conditions	...50	

History

Paper I.	General History of Modern Europe	...75	} Minimum pass marks 50
Paper II.	A period of Indian History	...75	

NOTE—Not more than three alternative periods shall be prescribed under this for a single year.

Political Science

Paper I	Political Theory.	...75	} Minimum Pass Marks 50
Paper II	(1) Constitutions of England, U. S. A. Switzerland, U.S.S.R. and India		
	(2) International relations of the period 1920—1949.	...75	

Geography

Paper I	Physical, Human & Practical Geography	...75	} Minimum Pass Marks 50
Paper II	Regional study of the Worlds, Asia and India	...75	

Drawing and Painting

Paper I	Object and Figure Drawing	...50	} Minimum Pass Marks 50
Paper II	Design and Nature Study	...50	
Paper III	Traditional Art and Art Appreciation	...50	

Sociology

Paper I	Principles of Sociology	...75	} Min. Pass Marks 50
Paper II	Indian Social Institutions	...75	

Indian Music A—Vocal

Paper	...50	} Minimum Pass Marks 17
Practical—		
Part I (Khyal)	...70	} 100 } Minimum Pass Marks 33
Part II (Dhrupapada and Dhamara)	...30	

B—Instrumental

Paper	...50	} Minimum Pass Marks 17
Practical—		
(a) Struck or bowed instruments	...100	} Minimum Pass Marks 33
(b) Tabla and Pakhawaj	...100	

Military Science

Paper I Military Organisation, Administration and Tactics	...50	} Minimum pass marks 45
Paper II Military Law (Indian)	...50	
Practical ....	...50	} Minimum Pass Marks 17

R. 12.

M. A. Examination

Each Paper	...	...	100 Marks.
<i>Viva voce, if any</i>	...	...	100 Marks.

For both the Previous and the Final Examinations, candidates must obtain for a pass at least 36 per cent of the aggregate marks in each subject. The marks of the two examinations, Previous and Final, will count together for a place on the pass list of the Final Examination. No division will be assigned on the result of the Previous Examination.

First Division 60 per cent	} of the aggregate marks
Second Division 48 per cent	

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

English (Previous and Final)

There shall be eight papers to be divided between the Previous and the Final. The papers for the Previous shall deal mainly with prescribed texts, the papers for the Final shall be of a more general nature and shall include an essay and a paper on the History of English Literature. The papers shall be divided as follows:—

Previous.

- Paper I Poetry from 1798 to the present day.
- Paper II Drama.
- Paper III Poetry from 1580 to 1800.
- Paper IV Prose from 1580 to 1800

Final

- Paper I History of Literature and Literary Criticism.
- Paper II Early Poetry.
- Paper III Prose from 1800 to the present day.
- Paper IV Essay.

There shall be a *viva voce* test in the Final Examination.

Note—In English the medium of instruction and examination shall be English.

Sanskrit (Previous and Final)

There shall be eight papers as follows—

- I Vedic Literature and Elements of Comparative philology.
- II Classical Literature and Grammar.
- III Indian Philosophy (for Groups A, C and D only).
- or
- III Jain Darsana and Buddha Darsana (for Group B only).
- IV Literary and cultural History of Ancient India.
Either—Group A—Sanskrit Language & Literature.
- V Rhetoric and Prosody.
- VI Drama and Dramaturgy.
- VII Kavya and Grammar

Or Group B—Philosophy

- V Nyaya and Vaishesika.
- VI Sankhya and Yoga.

VII Vedānta and Mīmāṃsā.

Or Group C—*Vedic Literature*

V Saṁhita Texts.

VI Vedic Accessory Texts.

VII Comparative Mythology and Religion.

Or Group D—*Dharma Śāstra.*

V Sūtra and Mīmāṃsā.

VI Smṛiti.

VII History of Dharma Śāstra and applied texts.

VIII Sanskrit Composition and Translation from English into Sanskrit.

Paper VIII shall be offered in the Final year only. Candidates can offer any other four papers in the Previous and the remaining three papers including the VIII in the Final Examination, subject to the following restrictions—

- (i) Candidates, offering one or more papers of Group A shall have to offer Paper II as one of the four papers for the Previous Examination.
- (ii) Candidates offering one or more papers of Group B shall have to offer Paper III for Group B only as one of the four papers for the Previous Examination.
- (iii) Candidates offering one or more papers of Group C shall have to offer Paper I as one of the four papers for the Previous Examination.

- NOTES—1. In each Paper questions shall be set demanding the knowledge of the History of branches in literature represented by the text-books.
 2. The question papers shall be set in English only, but the candidates shall have the option of answering questions in English, Hindi or Sanskrit unless they are specifically required to answer a particular question in Sanskrit.

Arabic (Previous and Final)

There shall be eight papers, four for the Previous and four for the Final. Paper VII (Translation) must be offered in the Previous and Paper VIII (Essay) in the Final. Out of the other Six, a candidate may select any three for the previous and the other three for the Final:—

Paper I Classical Prose.

Paper II Classical Poetry.

Paper III Literary Criticism.

Paper IV History of Arabic Literature.

Papers V and VI. Any two of the following:—

- (a) Mysticism.
- (b) Commentary on the Quran.
- (c) Text-Hadith and allied Lughat.
- (d) Logic and Metaphysics.
- (e) Comparative Philology of Semitic Languages.
- (f) History of Islam.

Paper VII Translation from English into Arabic and *vice versa*.

Paper VIII Essay.

NOTE.—Critical questions shall be set in Papers I and II. A sound knowledge of syntax prosody and rhetoric shall be expected. The Essay in Paper VIII shall be on literary subject.

Persian (Previous and Final)

There shall be *eight* papers, *four* for the Previous, and *four* for the Final. Paper VIII (Essay) must be offered in the Final. Out of the other seven, the candidate may offer any *four* in the Previous and the other *three* in the Final.

Paper I Classical Prose.

Paper II Classical Poetry.

Paper III Sufistic Poetry.

Paper IV Biographies.

Paper V History of Persian Literature.

Paper VI Modern Prose and Poetry.

Paper VII One of the following subjects selected by the head of the department in the beginning of the session:—

- (a) Mysticism.
- (b) Politics and Civics
- (c) Historical Literature.
- (d) Literary Criticism.

Paper VIII Essay.

NOTE.—1. Critical questions shall be set in Papers I, II, III and VI. A sound knowledge of syntax, prosody and rhetoric shall be expected. The Essay in paper VIII shall be on literary subject.

2. Instruction in Arabic and Persian shall be in English or Urdu. The question-papers shall be set in English only but the candidates shall have the option of answering the questions in English, the language concerned or Urdu, unless otherwise specified by the Examiner.

Latin (Previous)

There shall be the following *three* papers:—

Paper I	Prose Author: Cicero	} with questions dealing with the History, Geography, Antiquities and Mythology bearing on or relating to them, together with questions on Grammar and Philology.
Paper II	Poetical Authors: Terence, Lucretius, Horace and Juvenal.	
Paper III	Latin Prose Composition.	

Latin (Final)

There shall be the following *three* papers:—

Paper I	Prose Author: Tacitus	} with questions dealing with the History, Geography, Antiquities and Mythology bearing on or relating to them, together with questions on Grammar and Philology.
Paper II	Poetical Authors: Catullus, Propertius Tibullus and Virgil.	
Paper III	Latin Prose Composition.	

NOTE.—Candidates in the Final M A must be prepared to answer, if necessary, questions involving a knowledge of the Authors already taken for the Previous Examination.

Hindi (Previous and Final)

There shall be the following *eight* papers of which the Essay paper (Paper VIII) must be taken in the Final Examination and out of the remaining *seven* papers any *four* may be taken in the Previous Examination the other *three* may be taken in the Final Examination.

- Paper I Modern Prose and Drama.
- Paper II Modern Poetry.
- Paper III Mediaeval Texts.
- Paper IV Old Texts.
- Paper V Principles of Criticism and History of Literature.
- Paper VI Comparative Philology and development of Hindi language.
- Paper VII (a) A subsidiary Modern Indian Language,
or
(b) A Basic Language,

or

(c) Detailed and critical study of special author or period.

NOTE.—(a) The subsidiary languages recognised are Urdu, Marathi, Bengali and Gujarati.

(b) The basic languages recognised are Sanskrit, Pali, Apabhramsa and Dingal.

(c) The standard in this paper will be generally that of the Intermediate course.

(d) No candidate shall take that Basic or Subsidiary language which he had offered as one of the optional subjects in his Intermediate or B. A. Examination.

Paper VIII Essay.

Urdu (Previous and Final)

There shall be the following *eight* papers of which the Essay paper and the paper on Detailed and Critical Study of Special Author or period must be taken in the Final Examination and out of the remaining six papers any *four* may be taken in the Previous Examination and the other *two* in the Final:—

Paper I Modern Texts.

Paper II Detailed and Critical Study of the Special Author or period prescribed.

Paper III Principles of Criticism and the general history of Urdu Literature as well as the general cultural history of its speakers.

Paper IV Comparative Philology of the Modern Indian Languages with special reference to the history and development of Urdu.

Paper V Old Texts.

Paper VI} Mediaeval Texts.

Paper VII (a) A Subsidiary Modern Indian Language,

Or

(b) A Basic Language,

Or

(c) An additional author or period, other than the one offered for Paper II above.

Note.—(a) The Subsidiary language recognised is Hindi.

(b) The Basic languages recognised are Arabic and Persian

(c) The standard in this paper will generally be that of the Intermediate course.

(d) No candidate shall take that Basic or Subsidiary language which he had offered as one of the optional subjects in his Intermediate or B. A. Examination

Previous and any *two* out of the remaining in the Final Examination:—

- (a) Economic development and present Economic conditions of India and England.
- (b) Financial Organisation.
- (c) The State and Economic Welfare.
- (d) Labour Problems and Social Welfare.
- (e) Rural and Municipal Economics.
- (f) Theory and Practice of Statistics.
- (g) Co-operation.
- (h) Transport.
- (i) International Trade and Foreign Exchange.

Note.—Under the options in Group II, no college should select more than six options for the Previous and the Final Examinations taken together.

Any Final student, however, who has obtained in the Previous Examination, first or second class marks may have the option of submitting a thesis for his Final Examination in lieu of Paper I (c) (Essay) or any one other paper normally required from section II. The subject of thesis must be approved, in the case of college students by the heads of the departments of Economics in their respective colleges and in that of private candidates by the Convener of the Board of Studies in Economics, before 15th August of the year in which the thesis will be presented. Candidates selecting this option must submit their theses not less than three weeks before the beginning of their Final Examination and shall present themselves for a *viva voce* examination on the subjects of the thesis at the time of the Final Examination.

In the case of private candidates, the thesis shall be prepared under the directions of the head of the department of Economics in an affiliated college teaching the subjects of Economics up to the M. A. standard. Maximum marks for thesis shall be 100 of which 25 marks shall be assigned to *viva voce*. Marks shall be submitted by the examiners after the *viva voce* examination is over.

Political Science (Previous and Final)

There shall be *seven* papers in all including *one* on Essay. The Essay must be taken in the Final Examination. Of the rest any *three* may be taken at the previous and the remaining in the Final.

The papers shall be as follows:—

Paper I Ancient & Mediaeval Political Thought.

Papers V and VI. Any *two* of the following:—

- (a) Mysticism.
- (b) Commentary on the Quran.
- (c) Text-Hadith and allied Lughat.
- (d) Logic and Metaphysics.
- (e) Comparative Philology of Semitic Languages.
- (f) History of Islam.

Paper VII Translation from English into Arabic and *vice versa*.

Paper VIII Essay.

NOTE.—Critical questions shall be set in Papers I and II. A sound knowledge of syntax prosody and rhetoric shall be expected. The Essay in Paper VIII shall be on literary subject.

Persian (Previous and Final)

There shall be *eight* papers, *four* for the *Previous*, and *four* for the *Final*. Paper VIII (Essay) must be offered in the *Final*. Out of the other seven, the candidate may offer any *four* in the *Previous* and the other *three* in the *Final*.

Paper I Classical Prose.

Paper II Classical Poetry.

Paper III Sufistic Poetry.

Paper IV Biographies.

Paper V History of Persian Literature.

Paper VI Modern Prose and Poetry.

Paper VII *One* of the following subjects selected by the head of the department in the beginning of the session;—

- (a) Mysticism.
- (b) Politics and Civics.
- (c) Historical Literature.
- (d) Literary Criticism.

Paper VIII Essay.

NOTE.—1. Critical questions shall be set in Papers I, II, III and VI. A sound knowledge of syntax, prosody and rhetoric shall be expected. The Essay in paper VIII shall be on literary subject.

2. Instruction in Arabic and Persian shall be in English or Urdu. The question-papers shall be set in English only but the candidates shall have the option of answering the questions in English, the language concerned or Urdu, unless otherwise specified by the Examiner.

Latin (Previous)

There shall be the following *three* papers:—

Paper I	Prose Author: Cicero	} with questions dealing with the History, Geography, Antiquities and Mythology bearing on or relating to them, together with questions on Grammar and Philology.
Paper II	Poetical Authors: Terence, Lucretius, Horace and Juvenal.	
Paper III	Latin Prose Composition.	

Latin (Final)

There shall be the following *three* papers:—

Paper I	Prose Author: Tacitus	} with questions dealing with the History, Geography, Antiquities and Mythology bearing on or relating to them, together with questions on Grammar and Philology.
Paper II	Poetical Authors: Catullus, Propertius Tibullus and Virgil.	
Paper III	Latin Prose Composition.	

NOTE—Candidates in the Final M A must be prepared to answer, if necessary, questions involving a knowledge of the Authors already taken for the Previous Examination.

Hindi (Previous and Final)

There shall be the following *eight* papers of which the Essay paper (Paper VIII) must be taken in the Final Examination and out of the remaining *seven* papers any *four* may be taken in the Previous Examination and the other *three* may be taken in the Final Examination.

Paper I Modern Prose and Drama.

Paper II Modern Poetry.

Paper III Mediaeval Texts.

Paper IV Old Texts.

Paper V Principles of Criticism and History of Literature.

Paper VI Comparative Philology and development of Hindi language.

Paper VII (a) A subsidiary Modern Indian Language,

or

(b) A Basic Language,

or

(c) Detailed and critical study of special author or period.

NOTE.—(a) The subsidiary languages recognised are Urdu, Marathi, Bengali and Gujarati.

(b) The basic languages recognised are Sanskrit, Pali, Apabhramsa and Dingal.

(c) The standard in this paper will be generally that of the Intermediate course.

(d) No candidate shall take that Basic or Subsidiary language which he had offered as one of the optional subjects in his Intermediate or B. A. Examination

Paper VIII Essay.

Urdu (Previous and Final)

There shall be the following *eight* papers of which the Essay paper and the paper on Detailed and Critical Study of Special Author or period must be taken in the Final Examination and out of the remaining six papers any *four* may be taken in the Previous Examination and the other *two* in the Final:—

Paper I Modern Texts.

Paper II Detailed and Critical Study of the Special Author or period prescribed.

Paper III Principles of Criticism and the general history of Urdu Literature as well as the general cultural history of its speakers.

Paper IV Comparative Philology of the Modern Indian Languages with special reference to the history and development of Urdu.

Paper V Old Texts.

Paper VI] Mediaeval Texts.

Paper VII (a) A Subsidiary Modern Indian Language,

Or

(b) A Basic Language,

Or

(c) An additional author or period, other than the one offered for Paper II above.

Note.—(a) The Subsidiary language recognised is Hindi.

(b) The Basic languages recognised are Arabic and Persian

(c) The standard in this paper will generally be that of the Intermediate course.

(d) No candidate shall take that Basic or Subsidiary language which he had offered as one of the optional subjects in his Intermediate or B. A. Examination

Paper VIII Essay.

Note.—In Urdu the medium of instruction and examination shall be Urdu.

Philosophy (Previous and Final)

There will be *eight* papers out of which *four* may be taken in the Previous and the remaining *four* including the Essay in the Final examination.

The papers shall be as follows:—

Paper I	Ethics
Paper II	Psychology
Paper III	History of Western Philosophy (Ancient and Modern periods only)
Paper IV	Indian Philosophy
Papers V & VI	Any two of the following:— (a) Logic (b) Special study of an Indian Philosopher. (c) Philosophy of Religion (d) Advanced Psychology
Paper VII	Metaphysics
Paper VIII	Essay

History (Previous and Final)

There shall be *seven* papers including an Essay. The essay paper must be taken in the Final examination. Of the remaining six any *three* may be taken in the Previous and the remaining *three* in the Final.

The papers shall be as follows:—

- Paper I Modern Political Theory and Institutions.
- Paper II A selected period of English History (Not more than one period shall be prescribed under this for a single year).
- Paper III A selected period of European History. (Not more than two alternative periods shall be prescribed under this for a single year).
- Papers IV and V A selected period of Indian History, comprising of two papers. (Not more than three alternative periods shall be prescribed under this for a single year).
- Paper VI A special study paper (Not more than two alternative papers shall be prescribed under this for a single year).
- Paper VII Essay.

Mathematics (Previous)

[Same as for M. Sc. (Previous)]

There shall be *four* papers as follows:—

Paper I Algebra. Theory of Equations and Vector Analysis.

Paper II Differential and Integral Calculus. Differential Equations.

Paper III (1) Analytical Geometry of three dimensions.

(2) Analytical Geometry of two dimensions.

Paper IV Statics and Dynamics.

Mathematics (Final)

[Same as for M. Sc. (Final)]

There shall be *four* papers as follows:—

Paper I Theory of Aggregates and Theory of Functions.

Paper II Statics and Rigid Dynamics.

Papers III and IV. Any *two* of the following:—

(i) Spherical Harmonics.

(ii) Hydromechanics.

(iii) Elliptical Functions and Vector Analysis.

(iv) Spherical Trigonometry and Spherical Astronomy.

(v) Solid and Differential Geometry.

(vi) Complex Variable.

(vii) Mathematical Theory of Statistics.

(viii) Real Variable.

Economics (Previous and Final)

There shall be *eight* papers out of which a candidate shall be required to take *four* papers in the Previous and *four* papers in the Final examination as specified below:—

I. Of the following *three* papers *either* (a) *or* (b) shall be taken in the Previous and the other and (c) in the Final Examination:—

(a) Principles of Economics.

(b) History of Economic Thought, including the History of Socialism.

(c) Essay.

II. Of the following papers, any *three* may be taken in t

Previous and any *two* out of the remaining in the Final Examination:—

- (a) Economic development and present Economic conditions of India and England.
- (b) Financial Organisation.
- (c) The State and Economic Welfare.
- (d) Labour Problems and Social Welfare.
- (e) Rural and Municipal Economics.
- (f) Theory and Practice of Statistics.
- (g) Co-operation.
- (h) Transport.
- (i) International Trade and Foreign Exchange.

Note.—Under the options in Group II, no college should select more than six options for the Previous and the Final Examinations taken together.

Any Final student, however, who has obtained in the Previous Examination, first or second class marks may have the option of submitting a thesis for his Final Examination in lieu of Paper I (c) (Essay) or any one other paper normally required from section II. The subject of thesis must be approved, in the case of college students by the heads of the departments of Economics in their respective colleges and in that of private candidates by the Convener of the Board of Studies in Economics, before 15th August of the year in which the thesis will be presented. Candidates selecting this option must submit their theses not less than three weeks before the beginning of their Final Examination and shall present themselves for a *viva voce* examination on the subjects of the thesis at the time of the Final Examination.

In the case of private candidates, the thesis shall be prepared under the directions of the head of the department of Economics in an affiliated college teaching the subjects of Economics up to the M. A. standard. Maximum marks for thesis shall be 100 of which 25 marks shall be assigned to *viva voce*. Marks shall be submitted by the examiners after the *viva voce* examination is over.

Political Science (Previous and Final)

There shall be seven papers in all including one on Essay. The Essay must be taken in the Final Examination. Of the rest any three may be taken at the previous and the remaining in the Final.

The papers shall be as follows:—

Paper I Ancient & Mediaeval Political Thought.

Paper II Modern Political Thought.

Paper III Modern Constitutions—
Great Britain, U. S. A.,
Australia, Japan, U. S. S. R. & India.

Papers IV & V One of the following groups—(each group consisting of two papers).—

Group A.

(i) Public Administration with special reference to
England and India.

and

(ii) Local Self Government in India, England,
U. S. A. and Germany.

or

Group B.

(iv) International relations (1919–1949),

and

(v) Diplomacy: (a) History (1815–1919) &
(b) Technique.

or

(i) International Law & Organisation

or

Group C.

(vi) Principles of Sociology,

and

(vii) Social Psychology.

Paper VI (i) Contemporary Political Thought.

or

(ii) Asian Constitutions—Japan, Turkey, China, India,
Burma & Ceylon.

or

(iii) Development of Modern Indian Constitution—
(1858 to the present day) with special emphasis
on the New Constitution of India.

or

(iv) Contemporary Asia.

or

(v) Regional Studies.

Paper VII Essay.

Geography (Previous and Final)

The examination will consist of *eight* papers including a practical. Four papers shall be offered in *Previous* and *four* in *Final*. The distribution of papers for the M. A. (Previous and Final) Examinations shall be as follows:—

Previous

Paper I Principles of Physical Geography.

Paper II Principles of Human Geography.

Paper III Regional Geography of Asia or the Regional Geography of Europe with British Isles in greater detail.

Paper IV Any *one* of the following—

(1) The Three Southern Continents.

(2) Economic Geography.

(3) Geomorphology.

(4) Climatology.

(5) History of Geographical Knowledge and Discovery.

Final

Paper I Regional Geography of India.

Paper II and III. Any *two* out of the following, excluding the *ones* offered in the Previous Examination:—

(1) Asia or Europe.

(2) The Three Southern Continents.

(3) Economic Geography.

(4) Geomorphology.

(5) Climatology.

(6) History of Geographical Knowledge and Discovery.

(7) North America.

Paper IV Practical Examination—Field-work and Paper.

CHAPTER XXXII.

EXAMINATIONS—FACULTY OF SCIENCE.

A—Ordinances for admission of students to the examinations of the Faculty.

INTERMEDIATE EXAMINATION IN SCIENCE.

O. 216. Before entering upon the course of study prescribed for the Intermediate Examination in Science, every candidate shall be required to have passed either (a) the High School Examination of the University or (b) to have passed the High School Vocational Examination and the remaining compulsory subjects and the remaining additional paper in English prescribed for the High School Examination or (c) to have passed an examination which by Regulation is declared equivalent to the High School Examination of the University.

O. 217. No candidate shall be admitted to the Intermediate Examination in Science unless two academical years shall have elapsed since the date of his passing the High School or an equivalent examination; provided that candidates, who have passed the Cambridge School Certificate (Senior-Local) Examination in five such subjects as are recognised for the High School Examination of the University, may be admitted to the Intermediate Examination in Science in the academical year following that in which they pass the Cambridge School Certificate Examination.

O. 218. Every candidate for the Intermediate Examination in Science shall be examined in English and any *three* of the following subjects:—

- (1) Mathematics.
- (2) Chemistry.
- (3) Physics.
- (4) Biology.
- (5) Economics.
- (6) Geography.
- (7) Physiology, Hygiene and Child Study (for girls only).
- (8) Military Training.

O. 219. A candidate, who has passed the Intermediate Examination in Science of the University or that of Ajmer Board before 1948 may appear at a subsequent Intermediate in Science Examination or examinations conducted by the University in one or more optional subjects in which he has not previously passed the Intermediate Examination; provided that in

the case of a subject for which practical work or a practical examination is prescribed he produces satisfactory evidence to the University that he has completed the practical course prescribed for the subject in a college recognised by the University up to the Intermediate Examination in Science in that subject.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October, or by the 16th of October, if accompanied by a late fee of Rs. 5/-, or by 1st December in case he is a college candidate, preceding the date of examination. The application shall be accompanied by the examination fee prescribed and a marks fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-.

INTERMEDIATE SCIENCE (IN AGRICULTURE) EXAMINATION.

O. 220. Every candidate for admission to the Intermediate Science (in Agriculture) Examination shall be required to have passed the High School Examination of the University or an examination declared as equivalent thereto and to have since the passing of this examination, prosecuted a regular course of study for not less than two academical years at an institution recognised by the University for the Intermediate Science (in Agriculture) Examination.

Provided that a candidate who has passed the Intermediate Examination in Science of the University or an examination equivalent thereto with Chemistry and Biology as optional subjects may be admitted to the Intermediate Science (in Agriculture) Examination after prosecuting regular course of study for not less than one academical year, since the date of his passing the aforesaid examination at an institution recognised by the University for the Intermediate Science (in Agriculture) Examination.

O. 221. The following are the subjects of examination arranged in groups. The University may make such additions and alterations in them as it may, from time to time, decide:—

Subject I—Agriculture:—

- (a) Elements of Soil Science—Agricultural Geology, Soil Classification, Irrigation, Drainage, Tillage, Agricultural Meteorology, plant food, and general principles of

manuring, rotation of crops, etc., Agricultural Statistics and Economics.

- (b) Soil, Season, Rainfall, manuring requirements of various crops and their cultivation, etc., such as grains, pulses, fodders, Garden and Vegetable crops of the area.

- (c) Animal Husbandry and Veterinary Science.

Practicals:—I, II, III.

Marks.

Outline of test—Three written papers of three hours each	...	...	150
Three practicals	...	...	150

300

Subject II—Botany and Agricultural Zoology.

Two written papers.

(a) Botany	...	...	50
(b) Agricultural Zoology	...	...	50
Practical	...	...	50

Subject III—Chemistry and Physics.

Two written papers

(a) Chemistry	...	...	50
(b) Physics	...	...	50
Practicals	...	...	50

Subject IV—Mathematics and Land Surveying, Agricultural Engineering and Farm Machinery.

Two written papers of three hours each

Subject V—English.

Two written papers of three hours each

Total Marks ... 800

BACHELOR OF SCIENCE

O. 222. Courses of study for the B. Sc. degree shall extend over a period of two academical years and the degree examination shall be held at the end of second academical year.

O. 223. Candidates shall be required, before presenting themselves for the degree examination, to have attended a regular course of study in an affiliated college for two academical years.

O. 224. Every candidate shall be required to pass in any *three* of the following subjects:—

1. Physics.

2. Chemistry.
3. Mathematics.
4. Zoology.
5. Botany.
6. Geology.
7. Military Science.
8. Home Science.
9. Geography.
10. Economics.

Provided that no candidate shall be allowed to take any subject unless he has passed an examination in that subject in the Intermediate in Science or any other examination recognised as qualifying for admission to a degree course.

O. 225. A candidate may at his option, take General English or Military Science or both as an extra subject. The marks obtained by the candidate shall not be counted towards his aggregate and the class obtained by him in General English or Military Science or both shall be indicated in his Diploma.

The minimum number of lectures in General English that would be delivered to candidates who offer it as an extra optional subject shall be 100 for a two years' course and 50 for failures and detained candidates.

The minimum number of lectures in Military Science that would be delivered to candidates who offer it as an extra optional subject shall be 80 for a two years' course and 40 for failures and detained candidates.

O. 226. No candidate shall be allowed to offer "Military Science" as an optional or extra optional subject for the B. Sc. Examination, unless he has had previous Military training for at least two consecutive sessions.

O. 227. The examination shall be by means of papers; but candidates shall be required to undergo a practical examination, except in the case of Mathematics, Home Science, Economics and Geography, the examination in which shall be entirely by means of papers.

Candidates shall be required to pass separately in the practical examinations.

O. 228. Any candidate who has passed the B.Sc. Examination

of the University or that of Agra University before 1948, shall be allowed to present himself for examination in any one of the subjects prescribed for the B. Sc. Examination, and not already taken by him or her at this examination, and if successful, will be given certificate to that effect.

A candidate, who desires to enter for an examination under this Ordinance, must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October, or by the 16th of October, if accompanied by a late fee of Rs. 5/-, or by 1st December if he is a college candidate, preceding the date of the examination. The application shall be accompanied by an examination fee of Rs. 15/- and a marks fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

No candidate shall be allowed to offer Science subjects for examination unless he produces a satisfactory evidence that he has completed the course of instructions in Practical Science in an affiliated college during the year preceding the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees, shall be refunded after deducting Rs. 2/-.

BACHELOR OF SCIENCE (IN AGRICULTURE)

O. 229. A candidate who after passing the Intermediate Science (in Agriculture) Examination of this University or any other Examination in Agriculture recognised by the University as equivalent thereto, has attended a regular course of study in an affiliated college for two academical years, shall be eligible for appearing at the examination for the degree of Bachelor of Science (in Agriculture).

O. 230. Every candidate shall be required to pass in Agriculture, Agricultural Chemistry and in one of the following subjects:—

- (1) Botany with Plant Pathology;
- (2) Botany with Plant Breeding;
- (3) Botany with Horticulture;
- (4) Zoology with Parasitology and Entomology;

- (5) Zoology with Parasitology and Animal Breeding;
- (6) Rural Economics and Estate Management.

O. 231. The examination shall be conducted by means of papers, but candidates shall be required to pass separately in the Practical examination including viva voce in each subject.

O. 232. A candidate may, at his option, take Military Science as an extra subject. The marks obtained by the candidate shall not be counted towards his aggregate, and the class obtained by him in Military Science shall be indicated in his diploma and notified in the Gazette. The minimum number of lectures in Military Science that would be delivered to candidates who offer it as an extra-optional subject shall be 100 for a two years' course and 50 for failures and detained candidates:

Provided that no candidate shall be allowed to offer Military Science as an extra optional subject for the B. Sc. (Ag.) Examination, unless he has had previous Military Training for at least two consecutive sessions.

MASTER OF SCIENCE

O. 233. A candidate who, after obtaining the B.Sc. Degree of the University or of an Indian University recognised for the purpose by the Syndicate, has completed a regular course of study for one academical year in an affiliated college shall be admitted to the Previous Examination for the degree of Master of Science.

O. 234. A candidate who, after passing the Previous M. Sc. Examination of the University or that of Agra University before 1948, has completed a regular course of study for one academical year in an affiliated college, shall be admitted to the Final Examination for the degree of Master of Science.

O. 235. The examination for the degree of Master of Science shall consist of two parts:—

- (1) The Previous examination, and
- (2) The Final Examination.

O. 236. The examination shall be partly by means of papers and partly practical. In Mathematics the examination shall be by papers only.

O. 237. The subject of examination shall be one of the following:—

- (1) Mathematics
- (2) Physics.

- (3) Chemistry.
- (4) Zoology.
- (5) Botany.
- (6) Geology.

O. 238. Any candidate who has passed the M. Sc. Examination of this University or that of Agra University before 1948 in any subject shall be allowed to present himself for examination in any one or more of the optional papers in that subject not taken by him at the said examination, and if successful, will be given a certificate to that effect.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by the 16th of October if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of the examination. The application shall be accompanied by an examination fee of Rs. 15/- and a marks fee of Re. 1/- and shall be forwarded by the principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-.

B.—SCHEME OF EXAMINATIONS

R. 13 Intermediate Examination in Science

First Division	—60 per cent	} of the aggregate marks.
Second Division	—45 per cent	
Third Division	—33 per cent	

For distinction 75% of the aggregate marks in a subject shall be the minimum.

English

†1st Paper—	Prescribed Prose and Unseen* ...	3hrs. 50	} Minimum Pass Marks 33.
†2nd Paper—	Translation and Composition (§In the case of candidates offering English as mother tongue or whose mother-tongue is other than the Vernaculars—Hindi, Urdu, Marathi, Bengali or Gujarati—Essay).	... 3 hrs 50	

* In place of the unseen passages, candidates, who offer English as their mother-tongue, will be required to answer questions on supplementary prescribed text.

† Same as paper I and Paper II for the Inter. in Arts

§ In Such case of the third paper in English will consist of an essay together with the questions on English composition and the History of English Literature.

‡ Additional optional paper in English
on Genl. Knowledge (One hour paper) 100

Geography

1st Paper	3 hrs. 50	} Minimum Pass Marks 33
2nd Paper	3 hrs. 50	

Economics

1st Paper	3 hrs. 50	} Minimum Pass Marks 33
2nd Paper	3 hrs. 50	

Mathematics

1st Paper	Algebra and Trigonometry	3 hrs. 33	} Minimum Pass Marks 33
2nd Paper	Analytical Geometry & Elementary Calculus.	3 hrs. 33	
3rd Paper	Elementary Statics & Dynamics	3 hrs. 34	

Physics.

1st Paper	Properties of Matter, Heat and Light	3 hrs. 35	} Minimum Pass Marks 23
2nd Paper	Sound, Electricity and Magnetism	3 hrs. 35	
Practical work	...	30	} Min Pass Marks 10

Chemistry

1st Paper	...	...	3 hrs. 35	} Minimum Pass Marks 23
2nd Paper	...	...	3 hrs. 35	
Practical work	...	...	30	} Min. Pass Marks 10

Biology

1st Paper	Zoology	...	3 hrs. 35	} Minimum Pass Marks 23
2nd Paper	Botany	...	3 hrs. 35	
Practical work	...	...	30	} Min. Pass Marks 10

Physiology, Hygiene and Child Study (for female candidates only)

1st Paper...	...	...	3 hrs 35	} Minimum Pass Marks
2nd Paper	...	...	3 hrs. 35	
Practical	...	...	30	} 33

Military Training

1st Paper	...	...	3 hrs. 30	} Minimum Pass Marks 20
2nd Paper	...	...	3 hrs. 30	
Practical Test	...	...	40	} Minimum Pass Marks 13

† The result in this paper shall not affect the result and division of the candidates, but in case a candidate passes this paper and declared successful at the examination on entry will be made to this effect in his certificate. The candidates will have the option to answer this paper through Hindi medium with effect from the Examination of 1951

N.B.—Candidates must pass in each of the tests theoretical as well as practical in Physics, Chemistry and Biology

R. 14 Intermediate (in Agriculture) Examination.

Serial No.	Subject.	Paper.	Time-Hours.	Marks for each paper.	Total Marks	Minimum pass marks.
1	Group I Agriculture	First paper ...	3	50	150	50
		Second paper ...	3	50		
		Third paper ...	3	50		
		Practical on the theory of paper I...		50	150	50
2	Group II Botany and Zoology.	" " " " II...		50		
		" " " " III...		50		
		First paper—Botany ...	3	50	100	33
		Second paper—Agriculture Zoology..	3	50		
3	Group III Physics and Chemistry.	Practical-Botany		25	50	17
		" " Zoology		25		
		First Paper—Chemistry ...	3	50	100	33
		Second paper—Physics ...	3	50		
4	Group IV Mathematics and Agricultural Engineering	Practical—Chemistry Physics		25	50	17
		First paper—Mathematics and Land surveying...	3	50		
		Second paper—Agricultural Engineering and Farm Machinery...	3	50	100	33
		Group V English				
5		*First paper-Prose Text-book, books recommended for general study, unseen and Grammar	3	50	100	33
		*Second paper-translation and composition (in case of candidates offering English as mother tongue or whose mother tongue is other than the Vernaculars—Hindi, Urdu, Marathi, Bengali or Gujrati-Essay).	3	50		
		†Additional optional paper in English on General knowledge.†	1	100		

*The same as the first and third paper in English for the Intermediate in Arts Examination.

of the candidates
at the examination

N. B.—1 In groups 1, 2, 3 and 4 candidates shall be required to secure at least 25 p. c. of the marks in each paper and practical separately as well as to pass in the aggregate of the papers and practicals of each group 12 marks have been fixed as the minimum pass marks in a paper or practical of 50 marks and 6 marks in a paper of practical of 25 marks. In the case of group 5 candidates are however required to pass in the aggregate of the two papers

2. The minimum percentage of marks required for a pass in the first, second and third divisions is 60, 45 and 33 respectively in the aggregate.

For distinction, 75 per cent of the aggregate marks in a subject shall be the minimum.

R. 15.

B. Sc. Examination.

First Division	... 60 per cent.	} of the aggregate Marks.
Second Division	... 45 per cent.	

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

A candidate is required to pass in the total of the papers in the Science subjects as well as in practical examination in Science.

Physics.

Paper I	General Properties of Matter, Sound and Heat	... 50	} Minimum pass marks 33
Paper II	Light, Electricity and Magnetism	... 50	
†Practical	... ..	... 50	} Minimum pass marks 17

Chemistry.

Paper I	Inorganic and Physical	... 50	} Minimum pass marks 33
Paper II	Organic	... 50	
†Practical	... ..	... 50	} Minimum pass marks 17

Mathematics

Paper I	Algebra, Geometry and Trigonometry	... 50	} Minimum pass marks 50
Paper II	Differential and Integral Calculus and Differential Equations	... 50	
Paper III	Statics, Dynamics and Hydrostatics	... 50	

Zoology

Paper I	Non-Chordata	... 50	} Minimum pass marks 33
Paper II	Chordata	... 50	
*Practical	... ..	... 50	} Minimum pass marks 17

†In Physics Practical 10 per cent marks shall be assigned to note-books, preparations and record of practical work.

‡In Chemistry Practical, the marks shall be distributed as follows:—

Note books 5, Manipulation and General impression 5, Quantitative Experiments 20, Qualitative Exercises 20.

*In Zoology Practical 10 per cent marks shall be assigned to note-books, preparations and records of practical work.

Botany

Paper I	Morphology, Physiology and life histories of Cryptogams and Gymnosperms	...50	} Minimum pass marks 33
Paper II	Morphology, Physiology and life histories of Angiosperms, Plant Physiology, General Biology and Ecology	...50	
§Practical		...50	} Minimum pass marks 17.

Geology

Paper I	Dynamical and Structural Geology, Palaeontology and Historical Geology	...50	} Minimum pass marks 33
Paper II	Crystallography, Mineralogy, Petrology and Economic Geology.	...50	
Practical		...50	} Minimum pass marks 17

Economics

(Same as for B. A.)

Geography

(Same as for B. A.)

General English

(Same as for B. A.)

Paper I	Essay and Unseen	...50	} Minimum pass marks 33
Paper II	Questions on books prescribed for General study	...50	

Note.—In Paper II, there shall be no questions of a purely literary nature requiring detailed knowledge.

Military Science

Paper I	Military Organisation, Administration and Tactics	. 50	} Minimum pass marks 45
Paper II	Military Law (Indian)	...50	
Practical		...50	} Minimum pass marks 17

§In Botany Practical, 10 per cent marks shall be assigned to note-books, preparations and record of practical work.

R. 16.

B. Sc. (Ag.) Examination.

First Division	...	60 per cent	} of the aggregate marks.
Second Division	...	45 per cent	

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

A candidate is required to pass in the total of the papers, as well as in the Practical Examination in each subject.

Agriculture

Paper I	Crops and Cropping schemes; Soil Development50	} Minimum pass marks 84, with minimum of 12 marks in each of the first four papers and of 6 marks in each section of Paper V.
Paper II	Farm and Estate Management; Engineering	...	...50
Paper III	Agricultural Economics and Statistics; Commercial Farming	...	...50
Paper IV	Dairying and Animal Husbandry, Veterinary Science	...	...50
Paper V	(1) Diseases & Common Weeds. 25	25	...50	
*Practical I	Crop Culture50	} Min. pass marks 66, with a minimum of 14 marks in each of the first three practicals and 7 marks in each section of IV.
*Practical II	Farm Management	...	...50
*Practical III	Dairying and Animal Husbandry and Veterinary Science.	..	50	
*Practical IV.	(1) Pests 25 (2) Diseases & Weeds 25	25	...50	

Note.—15 per cent of the total marks in Practical Examination shall be reserved for work done by the candidates at the college during the two years preceding the examination

Agricultural Chemistry.

Paper I	Plant Chemistry, Soil Fertilizers and manures	...	...50	} Minimum pass marks 33
Paper II	Feeding Stuffs and Animal and Dairy Chemistry	...	...50	
Practical.	On the subject matter of papers I and II	...	...50	} Minimum pass marks 17

Botany with Plant Pathology.

Paper I	Botany50	} Minimum pass marks 33
Paper II	Plant Pathology.50	

Practical	(1) Botany	... 25	} 50	} Minimum pass marks 17
	(2) Plant Pathology	... 25		
Botany with Plant Breeding.				
Paper I	Botany	... 50	} 50	} " 33
Paper II	Plant Breeding	... 50		
Practical	(1) Botany	... 25	} 50	} " 17
	(2) Plant Breeding	... 25		
Botany with Horticulture.				
Paper I	Botany	... 50	} 50	} " 33
Paper II	Horticulture	... 50		
Practical	(1) Botany	... 25	} 50	} " 17
	(2) Horticulture	... 25		
Zoology with Parasitology & Entomology				
Paper I	Zoology with Parasitology	... 50	} 50	} " 33
Paper II	Entomology	... 50		
Practical.	Entomology and Parasitology	... 50	} " 17	
Zoology with Parasitology & Animal Breeding.				
Paper I	Zoology with Parasitology	... 50	} 50	} " 33
Paper II	Animal Breeding	... 50		
Practical.	Animal Breeding & Parasitology	50	} " 17	
Rural Economics and Estate Management.				
Paper I	Rural Economics	... 50	} 50	} " 33
Paper II	Estate Management	... 50		
Practical	Rural Economics and Estate Management	... 50	} " 17	

Note—10 per cent of the total marks in Practical Examination shall be reserved for work done by the candidates at the college during the two years preceding the examination.

R. 17

M.Sc. Examination

For both the Previous and Final Examinations, candidates must obtain for a pass at least 36 per cent of the aggregate marks in each subject. The marks of the two examinations, Previous and Final, will count together for a place on the pass list of the Final Examination. No division will be assigned on the result of the Previous Examination.

First Division	60 per cent.	} of the aggregate marks.
Second Division	48 per cent.	

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

A candidate is required to pass in the written and the practical examinations separately.

R. 16. B. Sc. (Ag.) Examination.

First Division	... 60 per cent	} of the aggregate marks.
Second Division	... 45 per cent	

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

A candidate is required to pass in the total of the papers, as well as in the Practical Examination in each subject.

Agriculture

Paper I	Crops and Cropping schemes; Soil Development	... 50	} Minimum pass marks 84, with minimum of 12 marks in each of the first four papers and of 6 marks in each section of Paper V.
Paper II	Farm and Estate Management; Engineering	... 50	
Paper III	Agricultural Economics and Statistics; Commercial Farming	... 50	
Paper IV	Dairying and Animal Husbandry; Veterinary Science	... 50	
Paper V	(1) 25 (2) Diseases & Common Weeds. 25	... 50	
*Practical I	Crop Culture	... 50	} Min. pass marks 66, with a minimum of 14 marks in each of the first three practicals and 7 marks in each section of IV.
*Practical II	Farm Management	... 50	
*Practical III	Dairying and Animal Husbandry and Veterinary Science.	.. 50	
*Practical IV.	(1) Pests 25 (2) Diseases & Weeds 25	... 50	

Note.—15 per cent of the total marks in Practical Examination shall be reserved for work done by the candidates at the college during the two years preceding the examination.

Agricultural Chemistry.

Paper I	Plant Chemistry, Soil Fertilizers and manures	...50	} Minimum pass marks 33
Paper II	Feeding Stuffs and Animal and Dairy Chemistry	...50	
Practical.	On the subject matter of papers I and II	...50	} Minimum pass marks 17
Botany with Plant Pathology.			
Paper I	Botany	...50	} Minimum pass marks 33
Paper II	Plant Pathology.	...50	

2. Paper VI shall be taken in the Final Examination. Of the other any *three* may be taken in the Previous Examination and the remaining *two* in the Final Examination.

Chemistry (Previous)

Paper I	Inorganic	...100
Paper II	Organic	...100
Paper III	Physical	...100
*Practical		...200

Chemistry (Final)

Inorganic—

Paper I	Elements and their compounds†	...100
Paper II	Methods and Theories†	...100
Thesis		
or		
Special paper	: Analytical Chemistry	...100
*Practical		.. 200

Or

Organic—

Paper I	Acyclic†	...100
Paper II	Cyclic†	...100
Thesis		...100
or		
Special paper	in one of the following:—	
(1)	Analytical Chemistry.	
(2)	Biochemistry.	
(3)	Chemistry of Natural and Synthetic Drugs Antibiotics.	...100
*Practical		...200

Or

Physical—

Paper I	Kinetics†	...100
Paper II	Thermodynamics†	.. 100
Thesis		...100
or		
Special paper	in one of the following:—	
(1)	Analytical Chemistry.	
(2)	Advanced Colloids.	
*Practical		...200

Note—The thesis type-written and in duplicate must reach the Registrar not later than one week before the date fixed for the written examination.

*In Chemistry Practical, 25 per cent marks shall be assigned to note-books, preparations and record of practical work.

†These titles are only to be taken as indicating generally the distinction between the two papers and not as defining their scope.

Mathematics (Previous)

There shall be four papers as follows:—

Paper I	Algebra, Theory of Equations and Vector Analysis	...100
Paper II	Differential and Integral calculus, Differential Equations	...100
Paper III	(1) Analytical Geometry of three dimensions (2) Analytical Geometry of two dimensions	...100
Paper IV	Statics and Dynamics	...100

Mathematics (Final)

There shall be four papers as follows:—

Paper I	Theory of aggregates and Theory of Functions	..100
Paper II	Statics and Rigid Dynamics	..100
Paper III and IV.	Any two of the following:—	
(i)	Spherical Harmonics	.. 100
(ii)	Hydro-mechanics	...100
(iii)	Elliptical Functions and Vector Analysis	...100
(iv)	Spherical Trigonometry and Spherical Astronomy	. 100
(v)	Solid and Differential Geometry	. 100
(vi)	Complex Variables	. 100
(vii)	Mathematical Theory of Statistics	. 100
(viii)	Real Variable	...100

Physics (Previous and Final)

1. There will be six papers and two practical examinations as follows:—

Paper I	Properties of Matter and Heat	...100
Paper II	Sound and Light	...100
Paper III	Electricity and Magnetism	. 100
Paper IV	Electron and Nuclear Physics	...100
Paper V	Modern Physics	..100
Paper VI	One of the following special subjects:—	...100
	(a) Meteorology,	
	(b) Spectroscopy,	
	(c) X-Rays;	
	(d) Wireless Telegraphy and Telephony.	

Practical—Previous	.. 150
Final	.. 150

Note.—20 per cent of the marks in practical shall be assigned to note-books and record of practical work

*Practical M. Sc. (Prev.).	... 200
„ M. Sc. (Final)	...200

For the M. Sc. (Prev.) the practical examination shall cover the subject matter of all the papers taken by the candidates.

For the M. Sc. (Final) the practical examination shall be common with the Previous on the subject matter of two papers. There shall be a practical test on the special paper for the Final.

CHAPTER XXXIII

EXAMINATIONS—FACULTY OF COMMERCE

A—Ordinances for admission of students to the examinations of the Faculty

INTERMEDIATE EXAMINATION IN COMMERCE

O. 239. Every candidate for admission to the Intermediate Examination in Commerce shall be required to have passed the High School Examination of the University or an examination equivalent thereto and to have, since the passing of this examination, prosecuted a regular course of study for not less than two academical years at an institution recognized by the University for the Intermediate Examination in Commerce.

O. 240. Candidates who have passed the High School Examination of the University or an equivalent examination may present themselves for examination in either one or both the papers of Steno-typing, (Short-hand and Typewriting test) of the Intermediate Examination in Commerce in any subsequent year as private candidates on payment of a fee of Rs. 8/-, for each paper, the minimum pass marks in each paper shall be 17 out of a maximum of 50. Such candidates, if successful, shall be awarded a certificate of having passed the Intermediate Examination in Commerce in Shorthand or Typewriting, or both, only.

O. 241. The following are the subjects of examination. These may be arranged in alternative groups in such manner and with such additions and alterations as the University may from time to time decide:-

*In Botany Practical, 15 per cent marks shall be assigned to note-books, preparations and record of practical work.

Compulsory

- (1) English.
- (2) Book-keeping & Accountancy.
- (3) Business Methods.
- (4) Economics & Commercial Geography.

Optional

Any one of the following:—

- (1) English Steno-typing (Shorthand and Typewriting).
- (2) Hindi Steno-typing (Shorthand and Typewriting).
- (3) Banking.
- (4) Elements of Industrial Organization.
- (5) Mathematics.
- (6) Advertising and Salesmanship.

O. 242. Any candidate, who has passed the Intermediate Examination in Commerce of the University (or that of Ajmer Board before 1948), may appear at any subsequent Intermediate Examination in Commerce conducted by the University in any subject in which he has not previously passed the Intermediate Examination in Commerce.

A candidate who desires to enter for an examination under this ordinance must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by the 16th of October, if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of examination. The application shall be accompanied by the examination fee prescribed and a marks fee of Re. 1/- and shall be forwarded by the Principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-.

BACHELOR OF COMMERCE

O. 243. The examination for the degree of Bachelor of Commerce shall be open to all students who, after passing any of the following examinations, have prosecuted a regular course of study at a college affiliated to the University for the B. Com. degree:—

- (i) the Intermediate Examination of the Board of High School and Intermediate Education, United Provinces, the Intermediate

Examination of the Board of High School and Intermediate Education for Rajputana (Including Ajmer-Merwara) Central India and Gwalior, or of an Indian University, incorporated by any law for the time being in force;

- (ii) the Commercial Diploma Examination of the Allahabad University or of the Board of High School and Intermediate Education, United Provinces;
- (iii) the Intermediate Examination in Commerce of the University or the Intermediate Examination in Commerce of the Board of High School and Intermediate Education, United Provinces, or of the Board of High School and Intermediate Education Rajputana, including Ajmer Merwara, Central India and Gwalior;
- (iv) the Intermediate (Group B—Special) Examination of the Delhi University with Regional and Commercial Geography as an optional subject;
- (v) the Intermediate Examination of the Andhra University with Economics, Commercial Geography and Accountancy as optional subjects;
- (vi) the Intermediate Examination in Commerce of the Nagpur University;
- (vii) the Intermediate Examination in Commerce of the Hindu University, Benares;
- (viii) Intermediate Examination in Commerce of the Bombay University.

O. 244. Courses of study for the B.Com. Examination shall extend over a period of three academic years and the degree examination shall be held at the end of third year's regular course of study in an affiliated college; provided that candidates who have passed the examinations mentioned in clauses (ii) to (viii) of Ordinance 243 above, shall be exempted from taking the first year Bachelor of Commerce course.

O. 245. A candidate may, at his option, take Military Science as an extra subject. The marks obtained by the candidate shall not be counted towards his aggregate, and the class obtained by him in Military Science shall be indicated in his diploma and notified in the Rajasthan Gazette. The minimum number of lectures in Military Science that would be delivered to candidates who offer it as an extra-optional subject shall be 100 for a two years' course and 50 for failures and detained candidates:

Provided that no candidate shall be allowed to offer Military Science

as an extra-optional subject for the B. Com. Examination, unless he has had previous military training for at least two consecutive sessions.

O. 246. Any candidate who has passed the B. Com. Examination of the University or that of Agra University before 1948 shall be allowed to present himself for examination in any one of the subjects prescribed for the B. Com. Examination and not already taken by him at this examination, and if successful, will be given certificate to that effect.

A candidate, who desires to enter for an examination under this Ordinance, must submit his application on a prescribed form so as to reach the Registrar not later than the 1st of October or by the 16th of October if accompanied by a late fee of Rs. 5/- or by 1st December in case he is a college candidate, preceding the date of the examination. The application shall be accompanied by an examination fee of Rs. 15/- and a marks fee of Re. 1/- and shall be forwarded by the Principal of the college concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate whose application is rejected or who does not submit an application but only sends in the fees, the amount paid by the candidate on account of fees shall be refunded after deducting Rs. 2/-.

MASTER OF COMMERCE

O. 247. The examination for the degree of Master of Commerce shall consist of two parts—

- (1) the Previous examination, and
- (2) the Final examination.

O. 248. A candidate who, after taking his B. Com. degree of the University or of an Indian University recognised for the purpose by the Syndicate, has completed a regular course of study in an affiliated college for one academic year, shall be admitted to the Previous Examination for the degree of Master of Commerce.

O. 249. A candidate who, after passing the Previous M. Com. examination, has completed a regular course of study for one academic year in an affiliated college, shall be admitted to the Final examination.

O. 250. Any candidate who has passed the M. Com. Examination of the University shall be allowed to present himself for examination in one paper or more of the optional papers prescribed for the M. Com. examination and not already taken by him at the said examination and if successful will be given a certificate to that effect.

A candidate who desires to enter for an examination under this Ordinance must submit his application on a prescribed form so as to

reach the Registrar not later than the 1st of October or the 16th of October, if accompanied by a late fee of Rs. 5/- or 1st December in case he is a college candidate, preceding the date of the examination. The application shall be accompanied by an examination fee of Rs. 15/- if he desires to appear in one of the papers and a fee of Rs. 5/- for each additional paper in addition to Rs. 15/- if he desires to appear at the same time in more than one paper provided that the total fee does not exceed the normal fee of Rs. 30/- for the examination; and marks fee of Re. 1/-, and shall be forwarded by the principal of the College concerned or other competent authority who forwarded the candidate's original application for permission to appear at the examination.

In the case of a candidate, whose application is rejected or who does not submit the application in that subject, the amount paid by the candidate on account of fee shall be refunded after deducting Rs. 2/-.

B—SCHEME OF EXAMINATIONS.

R. 18

Intermediate in Commerce.

1st Division—	60%	} of the aggregate marks.
2nd Division—	45%	
3rd Division—	33%	

For Distinction—75% of the aggregate marks in a subject shall be the minimum.

1. English:—

First Paper : Prose Texts and One Act Play	3 Hrs. 50	} Minimum Pass Marks 33
Second Paper: Translation, Composition and precis-writing	3 Hrs. 50	

*Additional Optional Paper in English on General knowledge	1 Hr. 100	} Minimum Pass Marks 33
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2. Book-keeping and Accountancy:—

First Paper: ...	3 Hrs. 50	} Minimum Pass Marks 33
Second Paper:	3 Hrs. 50	

3. Business Methods:

First Paper: Business Methods	3 Hrs. 50	} Minimum Pass Marks 33
Second Paper: Section A (English Commercial Correspondence and Market Reports)		
Section B (Hindi Commercial Correspondence and Market Reports).	3 Hrs. 50	

* The same as for the Inter. in Arts exam. The result in this Paper shall not affect the result and division of the candidates but in case a candidate passes in the Paper and declared successful at the examination an entry will be made to this effect in his certificate.

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|---|-----------|-------------------------------|--|
| 4. Economics and Commercial Geography: | | | |
| First Paper: Economics | 3 Hrs. 50 | } Minimum
Pass Marks 33 | |
| Second Paper: Commercial Geography | 3 Hrs. 50 | | |
| 5. Optional subjects (only one to be taken) | | | |
| (a) English Steno-typing: | | | |
| First Paper : @ Shorthand | 3 Hrs. 50 | } Minimum
Pass Marks
50 | |
| (Speed 80 words per minute) | | | |
| Second Paper: Typewriting | | | |
| (speed 30 words per minute) | 1 Hr. 50 | | |
| (b) Hindi Steno-typing: | | | |
| First Paper. @ Shorthand | 3 Hrs. 50 | } Minimum
Pass Marks
33 | |
| (Speed 80 words per minute) | | | |
| Second Paper: Typewriting | 1 Hr. 50 | | |
| (Speed 20 words per minute) | | | |
| (c) Banking. | | | |
| First Paper : Currency | 3 Hrs. 50 | } Minimum
Pass Marks 33 | |
| Second Paper: Banking | 3 Hrs. 50 | | |
| (d) Mathematics: | | | |
| First Paper : Arithmetic, Algebra
and Trigonometry | 3 Hrs. 50 | } Minimum
Pass Marks
33 | |
| Second Paper: Geometry and
Elementary Calculus | 3 Hrs. 50 | | |
| (e) Elements of Industrial Organisation | | | |
| First Paper . . . | 3 Hrs. 50 | } Minimum
Pass Marks 33 | |
| Second Paper. . . | 3 Hrs. 50 | | |
| (f) Advertising and Salesmanship: | | | |
| First Paper : Advertising | 3 Hrs. 50 | } Minimum
Pass Marks 33 | |
| Second Paper: Salesmanship | 3 Hrs. 50 | | |

B—SCHEMES OF EXAMINATIONS

R. 19.

B. Com. Examination

First Division—60 per cent
Second Division—48 per cent } of the aggregate marks.

© In order to be declared pass in the subject Steno-typing one should secure 33 per cent marks in the aggregate of the two papers, subject to a minimum of 20 per cent marks in each of the two papers.

† Excluding five minutes interval between the dictation of two sections in Shorthand.

All the rest in the Third Division, if they obtain the minimum pass marks in each subject.

I. Languages:—

Paper I English precis-writing and essay on a subject of Economic or Commercial interest	...50	} Minimum Pass Marks 36
Paper II Hindi unseen and essay. (In special cases where candidates do not know Hindi they may be allowed to answer General English II paper set for the B. A. Examination)	...50	

II. Commerce:—

Paper I Business Organisation (excluding labour problems and State in relation to Industry)	...50	} Minimum Pass Marks 54
Paper II Mercantile Law (excluding labour legislation)	...50	
Paper III Elements of Statistics	...50	

III. Economics:—

Paper I Principles of Economics, including Elementary Public Finance	...50	} Minimum Pass Marks 54
Paper II Banking and Currency	...50	
Paper III Modern Economic Development of India	...50	

IV. One of the following Special subjects with two papers in each and each paper of 50 marks ...100 } Min. Pass Marks 36

- (a) Advanced Accountancy and Auditing
- (b) Advanced Banking
- (c) Actuarial Mathematics
- (d) Insurance.

R. 20.

M. Com. (Previous and Final)

Each Paper shall carry 100 marks. For both the Previous and the Final Examinations candidates must obtain for a pass at least 36 per cent of the aggregate marks. The marks of the two examinations—Previous and the Final—will count together for a place on the pass list of the Final Examination. No division will be assigned on the result of the Previous Examination.

First Division—60 per cent.	} of the aggregate
Second Division—48 per cent.	
Third Division—36 per cent.	

Out of the following papers, candidates shall be required to take any *four papers in the Previous and any other four papers in the Final Examination*:—

- (1) Corporation Finance.
- (2) The Organisation of Industries.
- (3) The Organisation of Markets.
- (4) Banking and Foreign Exchange.
- (5) International Trade and Fiscal Policy.
- (6) Transport.
- (7) Law and Practice of Income-Tax.
- (8) Company Accountancy.
- (9) Principles and Practice of Auditing
- (10) Secretarial Work.
- (11) Statistics.
- (12) Labour Problems.
- (13) Co-operation.
- (14) Rural Economics.
- (15) Public Finance.
- (16) Economic and Commercial Geography.
- (17) Stock Exchanges.
- (18) Insurance.

Note—The subject matter of each paper shall be studied with special reference to India.

CHAPTER XXXIV

EXAMINATIONS—FACULTY OF LAW.

A—Ordinances for admission of students to the examinations of the Faculty

BACHELOR OF LAWS

O. 251. The Examination for the degree of Bachelor of Laws shall consist of two parts—

- (1) the Previous Examination.
- (2) the Final Examination.

O. 252. A candidate who, after taking the Bachelor's degree of

the University or of an Indian University recognised for the purpose by the Syndicate, with full course prescribed for the degree, has completed a regular course of study in an affiliated college for one academical year in law, shall be admitted to the previous examination for the degree of Bachelor of Laws.

O. 253. A candidate, who after passing the previous examination for the degree of Bachelor of Laws of the University has completed a regular course of study in an affiliated college for one academical year, shall be admitted to the final examination for the degree of Bachelor of Laws.

O. 254. Candidates may be allowed to combine Law and other Post-graduate studies provided that no candidate shall combine study for the final examination for the degree of Bachelor of Laws with studies for the final examination for Master's Degree in the same year.

Provided further that nothing in these Ordinances shall interfere with the right of a Principal to disallow any combination of courses of study in his college.

O. 255. Every candidate for the Previous Examination shall present himself for examination in the following subjects:—

- (i) Equity with special reference to the Law of Trusts and Specific Relief;
- (ii) The Law of Contracts,
- (iii) The Laws of Easements and Torts,
- (iv) The Law of Evidence;
- (v) Criminal Law and Procedure;
- (vi) Constitutional Law;
- (vii) Jurisprudence,

and the examination shall be conducted by papers.

O. 256. Every candidate for the examination for the degree of Bachelor of Laws shall present himself for examination in the following subjects:—

- (i) Civil Procedure, including Principles of Pleading and Limitation;
- (ii) The Law relating to Land Tenure, Rent and Revenue in the United Provinces of Agra and Oudh;
or
Central Provinces Rent and Revenue Laws;
- (iii) Hindu Law, with the Statutory modifications thereof;
- (iv) Mohammadan Law, with the statutory modifications thereof;

(v) The Law relating to Transfer of Property, including the Principles of Equity in so far as they relate to the subject;

(vi) Public International Law or Private International Law.

(vii) Company Law and Income-Tax Law;

and the examination shall be conducted by papers.

MASTER OF LAWS (LL. M.)

O. 257. A candidate who has passed the Bachelor of Laws Degree Examination of this University or an examination of some other University recognised by the Syndicate as equivalent thereto shall be permitted to appear and qualify for the Master of Laws Degree Examination of this University after having undergone the prescribed course of study in an affiliated college of this University:

Provided, however, whole-time teachers of Law after more than 3 years service in any affiliated college of this University shall be eligible to appear at the examination without having undergone the prescribed course of study in an affiliated college of this University.

O. 258 The Examination for the Degree of Master of Laws shall consist of two Parts, Part I and Part II. Subject to the proviso of the above Ordinance, a candidate shall offer himself for examination in Part I after having undergone a course of study in the subject prescribed for Part I for one academic year in any affiliated college of this University. No candidate shall be admitted to Part II of the examination unless he forwards before the commencement of the examination satisfactory evidence of having passed the Part I examination and of having undergone a course of study in the subjects prescribed for Part II for one year in any affiliated college after passing the Part I examination:

Provided, however, a candidate who holds the degree of Master of Laws of this University, or of any other University recognised as equivalent to the Master of Laws degree of this University may be permitted to appear for Part II of the examination in any branch in which he has not already qualified for the Master of Laws degree without having undergone the courses of study prescribed for the Part I of the examination and passed the same.

DOCTOR OF LAWS (LL. D.)

O. 259. A Master of Laws of this University or a Master of Laws of any recognised University who has served as a whole-time teacher of Law for 3 years in any affiliated college of this University may offer himself as a candidate for the degree of Doctor of Laws, provided three

years have elapsed from the time when he passed the examination for the Degree of Master of Laws.

O. 260. Every candidate shall state in his application the special subject falling within the purview of the Faculty of Law, upon a knowledge of which he rests his qualification for the Doctorate, and shall, with the application, transmit four copies, printed or type-written, of the thesis that he has composed upon some branch of law, or of the history or philosophy of law..

O. 261. The candidate shall indicate generally in a preface to his thesis, and especially in notes, the sources from which his information is taken, the extent to which he has availed himself of the work of others, and the portions of the thesis which he claims as original. He shall further state whether his research has been conducted independently under advice, or in co-operation with others, and in what respects his investigations appear to him to advance the study of law.

O. 262. The thesis shall be accompanied by a declaration signed by the candidate that it has been composed by himself and a certificate that the thesis has not previously formed the basis of award of any degree, diploma, associateship, fellowship or other similar title.

O. 263. A candidate may also forward with his thesis four printed copies of any original contribution or contributions to the advancement of the science on study of law whether published conjointly or independently, upon which he relies in support of his candidature.

O. 264. The application and thesis must be forwarded to the Registrar.

O. 265. The thesis, together with any other contributions & papers submitted, shall be referred by the Syndicate for report to a Board of three examiners. At the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination, provided, however, it shall be competent for the Syndicate, in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in this country; should the first mentioned Board of Examiners consider this necessary prior to coming to a decision and after receipt from the Board its report on the thesis and on the oral examination, if any, the Syndicate shall decide whether the candidate has qualified for the Degree or not.

O. 266. A candidate shall not be permitted to submit a thesis

for the Degree on more than two occasions; provided, it shall be competent for the Syndicate, after having taken into consideration the remarks of the Board of Examiners, to permit a candidate to submit a thesis on a third occasion.

B—SCHEMES OF EXAMINATIONS

R. 21.

LL- B. Examination.

Minimum pass marks are 48 per cent of the aggregate i. e. 336 provided that if a candidate fails to secure 36 per cent marks in any individual paper he will be deemed to have failed in the examination, notwithstanding his having obtained the minimum percentage of marks required in the aggregate for the examination.

Class I—60 per cent } of the aggregate marks.
Class II—48 per cent }

Previous.

Paper I	Equity, with special reference to the Law of Trusts & Specific Relief.	Marks 100
Paper II	The Law of Contracts	"
" III	The Law of Easements and Torts	"
" IV	The Law of Evidence	"
" V	Criminal Law and Procedure	"
" VI	Constitutional Law	"
" VII	Jurisprudence	"

Final.

* Paper I	Civil Procedure and Limitation	"
" II	The Law relating to Land Tenures, Rent and Revenue in the United Provinces of Agra and Oudh	"
	or	
	Central Provinces Rent & Revenue Laws	"
" III	Hindu Law, with the statutory modifications thereof	"
" IV	Mohammedan Law, with the statutory modifications thereof	"
" V	The Law relating to Transfer of Property, including the Principles of Equity in so far as they relate to the subject	"
" VI	Public International Law or Private International Law	"
" VII	Company Law & Income-Tax Law	"

Provided that the students who fail in the previous LL. B. Examination of 1950 or have failed in the earlier examinations of this University, will be allowed to offer Roman Law for Paper I of the Previous LL. B. Examination of 1951, after which, in case of failure, they will be required to put in necessary attendance in the paper of Equity with special reference to Trusts and Specific Relief, at any affiliated college, and the students who fail in the LL. B. Final Examination of 1951, or have failed in any earlier examination of this University, will be allowed to offer the Equity paper which will be common for both the Previous LL. B. Examination and the Final LL. B. Examination for such candidates.

R. 22.

LL. M. Examination.

PART I

Every candidate appearing for Part I of the Examination shall be examined in the following subjects:—

Paper I. Jurisprudence-Analytical & Historical.

Paper II. Legislation—Principles, Method and Interpretation.

Paper III. Legal History of India.

Paper IV. Legal History of England.

There shall be only one paper in each subject. Every paper shall be of 100 marks and of three hours duration.

PART II

Every candidate offering himself for Examination in Part II of the examination shall be examined in four papers belonging to any one of the following branches chosen by him for the purpose. Every paper shall be of 100 marks and of 3 hours duration.

Branch I.

Paper I. General Principles of Contract.

Paper II. Special Contracts.

Paper III. Company Law & Bankruptcy.

Paper IV. Negotiable Instruments & Maritime Law & Insurance.

Branch II.

Paper I. Torts-General Principles.

Paper II. Torts-Specific Wrong.

Paper III. History & Principles of Criminal Law.

Paper IV. Theory of Crime & Punishment.

Branch III.

Paper I. Sources & History of Hindu Law.

Ajmer Merwara), Central India and Gwalior, with Physics, Chemistry (including Organic Chemistry) and Biology, or of an Indian University incorporated by any law for the time being in force, with the same group of subjects as mentioned above or any other examination recognised by the University as equivalent thereto, has attended a regular course of study in an affiliated college for two academic years and has attained the age of 17 years by the 31st December of the year in which he is admitted to the college, shall be eligible for appearing at the First M. B., B. S. Examination.

(b) A candidate who, after passing the First M. B., B. S. Examination of the University has attended a regular course of study in an affiliated college for one academic year, shall be eligible for appearing at the Second M. B., B. S. Examination

(c) A candidate who after passing the First M. B., B. S. Examination of the University has for two years attended a regular course of study prescribed for the Final M. B., B. S. (Part I) Examination and has passed the Second M. B., B. S. Examination of the University, shall be eligible for appearing at the Final M. B., B. S. (Part I) Examination.

(d) A candidate who after passing the First M. B., B. S. Examination of the University has attended for three years a regular course of study prescribed for the (Final) M. B., B. S. (Part II) Examination and who has passed the Second M. B., B. S. and Final M. B., B. S. (Part I) Examinations of the University, shall be eligible for appearing at the Final M. B., B. S. (Part II) Examination.

O. 269. The examination shall be conducted by means of written papers and oral, practical and clinical examinations. Candidates shall be required to pass separately in (i) written and oral and (ii) practical examination at the First M. B., B. S., Examination and in (i) written and oral and (ii) practical and clinical examinations in the Final M. B., B. S. Examinations (Part I and Part II), as laid down in the scheme of examinations.

O. 270 Candidates who fail to appear at or to pass the First M. B., B. S. Examination in four successive examinations (within two years), shall not be allowed to continue their studies in the college.

O. 271 Every candidate for the First M. B., B. S. Examination shall be required to pass in the following subjects of study, including allied and cognate subjects under each head:—

(1) Anatomy,

(2) Physiology and Bio-chemistry.

O. 272. Candidates who obtain 50% of the maximum marks in the practical test in either Anatomy or Physiology, 40% in the written test and 60% in the written and practical tests taken together, may, at their option, be exempted from appearing in that subject at a subsequent examination. But they shall not be declared to have passed the whole examination until they have passed in both the subjects of the examination.

O. 273. Every candidate for the Second M B., B. S. Examination shall be required to pass in Pharmacology and Materia Medica, including the allied and cognate subjects.

O. 274. (a) Every candidate for the Final M B., B. S. (Part I) Examination shall be required to pass in the following subjects of study, including allied and cognate subjects under each head:—

- (1) Pathology and Bacteriology.
- (2) Hygiene and Public Health.
- (3) Medical Jurisprudence and Toxicology.

(b) Every candidate for the Final M B., B. S. (Part II) Examination shall be required to pass in the following subjects of study, including the allied and cognate subjects under each head:—

- (1) Medicine.
- (2) Surgery.
- (3) Obstetrics and Gynaecology.
- (4) Ophthalmology.

O 275. (a) A candidate who has failed in one or more subjects at the Final M B., B. S. (Part I or Part II) Examination may, at his option, take the examination in parts, in one or more subjects in which he has failed, or in whole; provided, however, he passes in all the subjects prescribed for the examination in four consecutive examinations, held within a period of two years, including the examination at which he first appeared. If he does not pass the full examination within a period of two years as mentioned above, he shall have to take the whole examination in all the subjects at the time, when he next appears at the examination.

(b) At the expiry of each period of two years or four
..... examination at which the candidates
..... or the examination, another period
..... which the provision of Ordinance
..... passing the examination.

(c) Non-appearance at an examination during any of the periods of two years shall be deemed as a failure to pass the examination.

O. 276. Candidates, who have obtained 75 per cent of the marks in any one subject for the First, Second or Final M. B., B., S. Examination, shall be deemed to have obtained distinction in that subject; provided that no candidate who does not pass in all the subjects of the examination at one time shall be declared to have passed with distinction in any subject.

O. 277. A candidate may, at his option, take Military Science as an extra subject. The marks obtained by the candidate shall not be counted towards his aggregate and the class obtained by him in Military Science shall be indicated in his diploma and notified in the Rajasthan Gazette. The minimum number of lectures in Military Science that would be delivered to candidates who offer it as an extra optional subject shall be 100 for a two years' course and 50 for failures and detained candidates.

O. 278. Notwithstanding anything contained in these Ordinances (1) a holder of the L. M. P., or L. S. M. F. Diploma of the State Medical Faculty, U. P., or (2) a holder of a similar Diploma of any other province recognised by the Syndicate of the University, who is a bonafide resident of an area within the jurisdiction of the University and has passed either (a) the Intermediate Examination of the University with the Medical group of subjects, Physics, Chemistry and Biology with a practical test in each subject or (b) an examination recognised as equivalent thereto, or (c) is a holder of L. M. P. or L. S. M. F. Diploma of any province recognised by the Syndicate of the University and has been a registered Medical practitioner for at least five years, may be admitted to the M. B., B. S. degree of the University; provided:

- (i) he has attended an affiliated college for not less than two calendar years, during which period he has gone through a course of study, theoretical, practical and clinical in Pathology, Forensic Medicine and Hygiene and Public Health for a period of one year, and in Medicine, Surgery, Obstetrics and Gynaecology and Ophthalmology for a period of two years. During the period special attention shall be given to the study of applied Anatomy and Physiology, applied Pharmacology and Clinical Pathology, and the Medical Council of India's requirements in Obstetrics and Gynaecology shall be fully complied with;
- (ii) he has passed the First Part of the Final M.B., B.S. Examination in Pathology, Forensic Medicine and Hygiene and Public Health, which may be taken at the end of the first year of the candidate's joining the affiliated college.

- (iii) he has passed the Second Part of the Final M. B., B. S. Examination in Medicine, Surgery, Obstetrics and Gynaecology and Ophthalmology, which will be held at the end of the second year of the candidate's joining the affiliated college; provided that no candidate shall be allowed to appear at the Final M. B., B. S. (Part II) Examination, unless he has passed the M. B., B. S. (Part I) Examination.

A candidate who desires to appear at the Final M. B., B. S. (Part I or II) Examination under this Ordinance must submit his application on a prescribed form by the 1st of March, for an examination in March-April following and by the 15th of September for an examination in October following and must send with his application the following:—

- (a) A certificate from the Principal of a Medical College affiliated to the University, which he has attended to the effect that he fulfils the conditions required under Ordinance 278
- (b) A certificate of character from the principal of the college concerned;
- (c) An application for enrolment together with the prescribed fee of Rs. 2, if the candidate is not already enrolled;
- (d) A marks fee of Re. 1/- and together with the fee prescribed for the examination.

INTERMEDIATE EXAMINATION IN PHARMACY.

O. 279. Every candidate for admission to the Intermediate Examination in Pharmacy Course shall be required to have passed the High School Examination of the University with Science (Science includes General Science) or an examination equivalent thereto and shall be required to prosecute a regular course of study for not less than two academical years at an institution recognised by the University for the Intermediate Examination in Pharmacy.

O. 280. There shall be two examinations, one at the end of first year called the Intermediate Examination in Pharmacy Part I and the other at the end of second year called the Intermediate Examination in Pharmacy Part II.

O. 281. There shall be held in the month of October an examination of candidates who have failed to pass or appear at the immediately preceding Intermediate in Pharmacy (Part I or II) examination in not more than two subjects and such candidates as may desire to take the October

examination, may be provisionally permitted at their own risk to join the next higher class in an affiliated college of the University and count attendance in case they are successful at the October Examination.

O. 282. The subjects of examination for the Intermediate Examination in Pharmacy Part I shall be the following:—

- ✓1. Inorganic and Physical Chemistry.
- ✓2. Organic Chemistry X
- ✓3. Physics.
- ✓4. Biology-Botany and Zoology.
- ✓5. English.

O. 283. (a) Only such candidates as have successfully passed the Intermediate Examination in Pharmacy Part I shall be eligible for appearing at the Intermediate Examination in Pharmacy Part II

(b) Notwithstanding anything contained in these Ordinances, a candidate who has passed the Intermediate examination of the University, or an examination equivalent thereto, with Chemistry, Physics and Biology or Mathematics as optional subjects, may be admitted to the Intermediate Examination in Pharmacy Part II after prosecuting a regular course of study for not less than one year, since the date of his passing the aforesaid examination, at an institution recognised by the University for the Intermediate Examination in Pharmacy. Such candidates shall also be required to appear in the paper or papers prescribed for Biology for the Intermediate Examination in Pharmacy Part I if they had not taken Biology for the Intermediate Examination in Science.

O. 284. The subjects of examination for the Intermediate Examination in Pharmacy Part II shall be:—

- ✓1. General Pharmacy
- ✓2. Dispensing Pharmacy.
- ✓3. ^{Essence of Pharmacy} Pharmaceutical Chemistry. (~~Essence of Pharmacy~~)
- ✓4. Pharmacognosy.
- ✓5. Anatomy, Physiology, Pharmacology, Hygiene and First Aid.
- ✓6. English X

O. 285. A regular record of both theoretical and practical class work and examinations conducted in an institution imparting training for this course shall be maintained for each student and 30% marks

in each subject both theory and practical, shall be allotted for these records.

O. 286. A candidate shall not be declared to have passed the above examinations unless he secures at least 40% marks in each subject and 45% marks in the aggregate of all the subjects. Candidates securing 60% and above in the aggregate shall be placed in the first division and those securing 45% and above shall be placed in the second division. Candidates securing 75% marks or above in any subject or subjects shall be declared to have obtained distinction in that subject or subjects, provided that no candidate who does not pass in all the subjects of the examination at one time shall be declared to have passed with distinction in any subject.

O. 287. A candidate who has failed to appear or pass in not more than 2 subjects at the Intermediate Examination in Pharmacy Part I or II may at his option take the examinations in parts, in one or more subjects in which he has failed, or in whole; provided, however, he passes in all the subjects prescribed for the examination in three consecutive examinations, or within a period of two years, including the examination at which he first appeared. If he does not pass the full examination within a period of two years as mentioned above he shall have to take the whole examination in all the subjects at the time, when he next appears at the examination.

O. 288. After the completion of the regular academic course and passing at the Intermediate Examination in Pharmacy, a candidate shall be granted a Pharmacist's diploma on production of a satisfactory evidence of having undergone practical training in a recognised institution—Hospital, Pharmacy or Dispensary, for not less than ~~750 days~~ ^{30 days}, on certification by the principal of the college concerned. During this course of training the candidate shall acquire:—

1. A competent knowledge of the keeping of records required by the various acts affecting the profession of pharmacy, and
2. Experience in—
 - (a) the manipulation of pharmaceutical apparatus in common use,
 - (b) the recognition, by sensory characters, of chief crude drugs and chemical substances used in medicine,
 - (c) the reading, translation and copying of prescriptions, including the checking of doses,

- (d) the dispensing of prescriptions illustrating the commoner methods of administering medicaments, and
- (e) the storage of drugs and medicinal preparations.

BACHELOR OF PHARMACY.

O. 289. There shall be three examinations, viz:-

1. Bachelor of Pharmacy Examination Part I.
2. Bachelor of Pharmacy Examination Part II.
3. Bachelor of Pharmacy Examination Part III.

O. 290. There shall be held in the month of October an examination of candidates who have failed to pass or appear at the immediately preceding Bachelor of Pharmacy (Part I, II or III) Examination and such candidates as may desire to take the October examination, may be provisionally permitted at their own risk to join the next higher class in an affiliated college of the University and count attendance in case they are successful at the October examination.

O. 291. (a) A candidate who after passing the Intermediate Examination in (i) Science (with Physics, Chemistry, Mathematics or Biology) or (ii) Pharmacy of the University or an equivalent examination thereto, has attended a regular course of study in an affiliated college for one academic year, shall be eligible for appearing at the Bachelor of Pharmacy Examination Part I.

(b) A candidate who, after passing the Bachelor of Pharmacy Examination Part I, of the University has attended a regular course of study in an affiliated college for one academic year, shall be eligible for appearing at the Bachelor of Pharmacy, Examination Part II.

(c) A candidate who, after passing the Bachelor of Pharmacy Examination Part II of the University has attended a regular course of study in an affiliated college for one academic year shall be eligible for appearing at the Bachelor of Pharmacy Examination Part III.

(d) Notwithstanding anything contained in these ordinances, a candidate who has passed the M. Sc. Examination in Chemistry of the University or an examination equivalent thereto may be admitted to the Bachelor of Pharmacy examination Part II after prosecuting a regular course of study for not less than one academic year since the date of his passing the aforesaid examination at an institution recognized for the Bachelor of Pharmacy examination Part II. Such a candidate shall, however, be exempted from appearing in Physical Chemistry and Advanced Organic Chemistry required for the Bachelor of Pharmacy examination Part II,

in each one of these subjects:—

1. Chemistry of Natural & Synthetic Drugs and Antibiotics;
2. Pharmacognosy;
3. Microbiology;
4. Biochemistry, Pharmacology and Toxicology;
5. Food and Water Analysis;
6. Principles of Accounting and Business Administration.

O. 296. A regular record of both theoretical and practical class work and examinations conducted in an institution imparting training for this course shall be maintained for each student and 30% marks in each subject, both theory and practical, shall be allotted for these records.

O. 297. A candidate shall not be declared to have passed the above examinations unless he secures at least 40% marks in each subject and 45% marks in the aggregate of all the subjects. Candidates securing 60% and above in the aggregate shall be placed in the first division and those securing 45% and above shall be placed in the second division. Candidates securing 75% marks or above in any subject or subjects shall be declared to have obtained distinction in that subject or subjects provided that no candidate who does not pass in all the subjects of the examination at one time shall be declared to have passed with distinction in any subject.

O. 298. A candidate who has failed to appear or pass in one or more subjects at the Bachelor of Pharmacy examination, Part I or II or III may at his option take examination in parts in one or more subjects in which he has failed, or in whole; provided, however, he passes in all the subjects prescribed for the examination in three consecutive examinations, or within a period of two years including the examination at which he first appeared, if however, he does not pass the full examination within a period of two years as mentioned above he shall have to take the whole examination in all the subjects at the time, when he next appears at the examination.

O. 299. After the completion of a regular academic course and passing the Bachelor of Pharmacy examination, Part II, a candidate shall be granted a Pharmacists diploma on production of a satisfactory evidence of having undergone practical training in a recognised institution—Hospital, Pharmacy, Dispensary, or a manufacturing establishment for not less than 90 days on certification by the principal of the college concerned. During this course of training the candidate shall acquire:

- (a) A competent knowledge of keeping records required by the various acts affecting the profession of Pharmacy;

(b) Experience in:

- (i) the manipulation of pharmaceutical apparatus in common use;
- (ii) The recognition, by sensory characters, of chief crude drugs and chemical substances used in medicine;
- (iii) The reading, translation, and copying of prescriptions, including the checking of doses;
- (iv) The dispensing of prescriptions illustrated by the commoner methods of administration; and
- (v) The storage of drugs and medicinal preparations.

B.—SCHEME OF EXAMINATIONS**Bachelor of Medicine and Bachelor of Surgery.**

R. 23. Each written paper shall be of three hours duration.

R. 24. If a candidate obtains an aggregate of 75 per cent in a subject he will be declared to have passed with distinction in the subject. Only those candidates will be considered qualified for distinction who pass the Examination in the first attempt.

R. 25. **First M. B., B. S. Examination**
Anatomy.

	Marks.	Minimum pass marks.	Minimum pass marks in aggregate.
Paper I	...100	80	200
Paper II	...100		
Oral	... 50	100	
Practical	...150		

Note.—Each paper shall consist of 5 questions, all to be attempted.

Physiology.

Paper I	...100	80	200
Paper II	...100		
Oral	...50	100	
Practical	...150		

Notes—1. *Don't forget to answer all questions.*
2. *Don't forget to answer all questions.*

ee questions each
Biochemistry and
in section B shall
answered in the

R. 26. Second M. B., B. S. Examination.

*Pharmacology, including Materia Medica, Pharmacy
and Pharmacological Therapeutics.*

	Marks.	Minimum pass marks.	Minimum pass marks in aggregate.
Paper ...	100	40	100
Oral ...	40	50	
Practical ...	60		

Note.—The paper shall consist of two sections, A and B, of 3 questions each, all to be attempted. Each section shall be answered in separate answer-books.

R. 27. Final M. B., B. S. Examination (Part I). Pathology and Bacteriology.

Paper I ...	100	80	200
Paper II ...	100		
Oral ...	50	100	
Practical ...	150		

Note—Each paper shall consist of 5 questions, all to be attempted.

Hygiene and Public Health.

Paper ...	100	40	100
Oral ...	100	50	

Note.—The paper shall consist of two sections, A and B, of 3 questions each, all to be attempted.

Each section shall be answered in separate answer-books

Medical Jurisprudence and Toxicology.

Paper ...	100	40	100
Oral ...	100	50	

Note—The paper shall consist of two sections, A and B, of 3 questions each, all to be attempted.

Each section shall be answered in separate answer-books.

R. 28. Final M. B., B. S. Examination (Part II). Medicine.

Paper I	...100	80	200
Paper II	.. 100		
Oral	... 40	100	
Practical	... 60		
Clinical—			
Long case	... 40		
Short case	.... 60	

Notes—1. Each paper shall consist of 5 questions, all to be attempted.

2. The Practical and Clinical Examinations shall be as follows:—

Practical Examination, including the examination of the secretions, urine, pathological specimens and clinical microscopy.

Clinical Examination—

- (a) One medical case for which at least one hour will be allowed to the candidate for examination and report exclusive of the time devoted to the interrogation of the candidate by the examiner.
- (b) Brief clinical examination of other medical cases which may include diseases of children.

Surgery.

	Marks	Minimum pass marks	Minimum pass marks in aggregate
Paper I	...100	80	200
Paper II	...100		
Oral	... 40		
Practical	... 60		
Clinical		100	
Long case	... 40		
Short case	... 60		

Notes—1. Each paper shall consist of 5 questions, all to be attempted.

2. The Practical and Clinical Examination shall be as follows—

Practical Examination—Surgical anatomy and instruments, one operation on cadaver.

Clinical Examination—

- (a) One surgical case for which at least one hour will be allowed to the candidate for examination and report, exclusive of the time devoted to the interrogation of the candidate by the examiner.
- (b) Brief clinical examination of other surgical cases, which may include diseases of children

Obstetrics and Gynaecology.

Paper100	40	}	100
Oral20	50		
Practical and				
Clinical	....80		

Note—The paper shall consist of two sections, A and B, of 3 questions each, all to be attempted

Each section shall be answered in separate answer-books.

Ophthalmology.

Paper100	40	}	100
Oral20	50		
Practical and				
Clinical	....80		

Note—The paper shall consist of two sections, A and B, of 3 questions each, all to be attempted.

Each section shall be answered in separate answer-books.

R. 29. Intermediate Examination in Pharmacy Part I.

Subjects of Examination.	Theory.			Practical.		
	Written 3 hours Marks	Sessional Marks	Min. Pass Marks	Test Marks.	Sessional Marks.	Min. Pass Marks.
Inorganic & Physical Chemistry Paper I (Inorganic) Paper II (Physical)	35 } 35 }	30	40	70 35	30 15	20 4
Organic Chemistry Paper I Paper II	35 } 35 }	30	40	35	15	20
Physics	35	15	20	35	15	20
Botany } Zoology } Biology	35	15	20	35	15	20
English } Paper I Paper II	35 } 35 }	30	40	—	—	—
	210	90		140	60	

Total marks for the Examination 500

Minimum Pass Marks in the aggregate 225.

R. 30. Intermediate Examination in Pharmacy Part II

Subjects of Examination	Theory.			Practical.		
	Written 3 hours Marks	Sessional Marks.	Min. Pass Marks	Test Marks.	Sessional Marks.	Min. Pass Marks
General Pharmacy	35	15	20	35	15	20
Dispensing Pharmacy	35	15	20	70	30	40
Pharmaceutical Pharmacy	35	15	20	—	—	—
Chemistry	35	15	20	35	15	20
Pharmacognosy	35	15	20	35	15	20
Anatomy, Physiology, Pharmacology, Hygiene and First Aid	35	15	20	35	15	20
Pharmaceutical Chemistry Paper I (Inorganic) Paper II (Organic)	35 } 35 } 210	30 135	40	70 245 210	30 105 90	40

Total marks for the Examination ~~600~~ 760Minimum Pass Marks in the aggregate ~~270~~ 315

N. B.—There shall be set 8 questions (4 in each section) in each paper out of which six are to be attempted.

These rules will be applicable from July 1852

R. 31.

B. Pharm. Part I.

Subjects of Examination.	THEORY.			PRACTICAL.		
	Written marks	Sessional marks	Min. Marks for pass	Test marks	Sessional marks	Min. marks for pass
1. Inorganic & Analytical Chemistry						
Paper I. (Inorganic)	35	30	40	35	15	20
Paper II (Analy).	35			70	30	40
2. Organic Chemistry.	35	15	20	35	15	20
3. Foreign Language.	35	15	20	...	...	...
Any two of the following:—						
4. Anatomy, Physiology; Hygiene and First Aid.	35	15	20	35	15	20
5. Biology	35	15	20	35	15	20
6. Elementary Maths. & Prac. Physics	35	15	20	35	15	20
7. Perfumes & Cosmetics.	35	15	20	35	15	20

Total Theory...003 Practical.....300 Min. marks in aggregate ..270.

R. 32.

B. Pharm. Part II Examination.

Subjects of Examination.	THEORY.			PRACTICAL.		
	Written marks.	Sessional marks.	Min. marks for pass.	Test marks	Sessional marks	Min. marks for pass.
1. Physical Chemistry	35	15	20	35	15	20
2. Advanced Organic Chemistry.	35	15	20	35	15	20
3. Foreign Language.	35	15	20	...	...	..
Group A.						
4. Dispensing and Forensic Pharmacy.	35	15	20	70	30	40
5. Gen. Pharmacy.	35	15	20	35	15	20
6. Pharmacognosy.	35	15	20	35	15	20
Group B.						
7. Industrial Chemistry.	35	15	20	70	30	40
8. Pharmaceutical Technology.	35	15	20	70	30	40
9. Principles of Economics and Sales Promotion.	35	15	20	...	...	...

Total Theory ..300 Practical.....300 Min. marks in aggregate.. 270

R. 33

B. Pharm. Part III Examination.

Subjects of Examination	Theory			Practical		
	Written marks.	Sessional Marks	Min. Marks for Pass	Test Marks.	Sessional Marks.	Minimum Marks for Pass
1. Chemistry of natural and Synthetic Drugs and Antibiotics ...	35	15	20	70	30	40
2. Pharmacognosy ...	35	15	20	35	15	20
3. Microbiology ..	35	15	20	35	15	20
4. Biochemistry, Pharmacology & Toxicology:—						
Paper I (Biochemistry)	35	30	40	35	15	20
Paper II (Pharmacology and Toxicology) ..	35					
5. Food and Water Analysis ...	...	...	...	35	15	20
6. Principles of Accounting & Business Administration ...	35	15	20	...	...	...

Total Theory.. 300 Practical.. 300 Min. marks in aggregate...270

N. B.—Every candidate must pass in subjects 4 and 5 of B Pharm. Examination Part I, unless he has already passed in these subjects by offering them at the I, Sc, I. Pharm. or Higher University Examinations before admission to the course. Such candidates as have taken admission after passing in subject 5 only shall take subject 6 or 7 of Part I.

Every candidate who has already passed in subjects 4, 5, 6 of B. Pharm. Examination Part II as part of his study for I Pharm. or an equivalent examination shall take subjects 7, 8 and 9. The same foreign language must be continued for Parts I and II.

Subjects 4 and 5 of B Pharm. Part I are not open to candidates who join the course after I. Pharm. Examination.

Each paper shall be of three hours' duration. Eight questions (4 in each section) shall be set in each paper unless otherwise stated under the paper concerned and six questions are to be attempted.

CHAPTER XXXVI

EXAMINATIONS—FACULTY OF ENGINEERING
AND TECHNOLOGYA—Ordinances for admission of students to the examinations
of the Faculty

BACHELOR OF ENGINEERING

O. 300. The courses of study shall extend over a period of four years, viz. three years at college and one year practical training in a workshop or factory approved by the Principal of an Engineering College.

O. 301. There shall be an examination at the end of each year viz.—

At the end of first year—

First Examination in Engineering (F.E.)

At the end of second year—

Second Examination in Engineering (S.E.)

At the end of third year—

Bachelor of Engineering (B.E.)

O. 302. The examination shall be conducted by means of written papers, and practical and *viva voce* examinations including sessional work done in the college laboratories, drawing offices and workshops.

O. 303. A candidate, who after passing the Intermediate in Science Examination with Mathematics, Physics and Chemistry of the University, or any other examination recognised by the University as equivalent thereto, has attended a regular course of study in an affiliated college for one academical year shall be eligible for appearing at the F. E. Examination.

O. 304 Every candidate for the F. E. Examination shall be required to show a competent knowledge of:—

- (1) Mathematics.
- (2) Mechanics.
- (3) Engineering Chemistry.
- (4) Engineering Physics.
- (5) Mechanical Engineering.

- (6) Electrical Engineering.
- (7) Civil Engineering.
- (8) Surveying.
- (9) Machine Drawing.
- (10) Practical Geometry.

O. 305. A candidate, who after passing the F. E. Examination of the University has attended a regular course of study in an affiliated college for one academical year, shall be eligible for appearing at the S. E. Examination.

O. 306. Every candidate for the S. E. Examination shall be required to show a competent knowledge of:—

- (1) Mathematics.
- (2) Theory of Machines.
- (3) Strength of Materials & Theory of Structures.
- (4) Graphic Statics.
- (5) Hydraulics and Hydraulic Machinery.
- (6) Heat Engines
- (7) Electrical measurements & measuring instruments.
- (8) Workshop Technology.
- (9) Machine Drawing and Design.
- (10) Electrical Engineering.

O. 307. There shall be the following branches of study for the B. E. Examination:—

- A. Mechanical Engineering;
- B. Electrical Engineering,
- C. Civil Engineering;

and a candidate shall be required to specialise only in one branch of study at a time.

O. 308. A candidate who after passing the S. E. Examination of the University has attended a regular course of study in a particular branch in an affiliated college for one full academical year shall be eligible for appearing at the B. E. Examination in that branch of study.

O. 309. Every candidate for the B. E. Examination in Mechanical Engineering shall be required to show a competent knowledge of:—

- (1) Strength of Materials and Theory of Structures.

- (2) Theory of Machines.
- (3) Generation and Utilisation of Electric Power.
- (4) Hydraulic Machinery and Water Power Engineering.
- (5) Heat Engines.
- (6) Automobile Engineering and Refrigeration.
- (7) Engineering Economics and Industrial Management.
- (8) Industrial Plants and Engineering Production.

O. 310. Every candidate for the B. E. Examination in Electrical Engineering shall be required to show a competent knowledge of:—

- (1) Strength of Materials and Theory of Structures.
- (2) Transmission and Distribution of Power.
- (3) Generation and Utilisation of Power including Traction.
- (4) Hydraulic Machinery and Water Power Engineering.
- (5) Heat Engines.
- (6) Engineering Economics and Industrial Management.
- (7) Electrical Machinery.
- (8) Communication Engineering, Telegraphy, Telephony and Wireless.

O. 311. A candidate after passing the B. E. Examination of the University in a prescribed branch of study shall be admitted to the degree of Bachelor of Engineering in that Branch of study on producing evidence to the satisfaction of the Syndicate that he has undergone practical training for a period of 12 months (280 working days minimum) in a workshop or factory approved by the Principal of an Engineering College.

O. 312. A candidate who after passing B. E. examination either in Mechanical Branch or Electrical Branch, has attended a regular course of study in an affiliated college for one full academical year in the B. E. Electrical Branch or Mechanical Branch shall be eligible for appearing for the B. E. Electrical Examination or B. E. Mechanical Examination, as the case may be. He shall be exempted from the following common papers only:—

- I. a. Strength of Materials & Theory of Structures II.
- II. b. Hydraulic Machinery and Water Power Engineering.
- III. a. Heat Engines II.
- IV. a. Engineering Economics Industrial Management.

He shall be declared to have passed and shall be placed in a division according to the marks secured by him in the rest of the examination including general fitness for profession.

O. 313. A candidate who has passed the B. E. degree examinations in both the branches shall also undergo practical training for a period of 12 months (280 working days minimum) in a workshop or factory approved by the Principal of an Engineering College before he is awarded the degree in the two branches.

O. 314. The four years' course as given in foregoing Ordinances shall come into operation with effect from July 1949 i. e. the first F. E. Examination shall be conducted in April 1950. This batch will have the S. E. Examination in April 1951 and B. E. Examination in April 1952.

O. 315. Candidates who have passed B. E. Previous Part I in April 1949 under the old Ordinances shall be admitted to the S. E. course under the new Ordinances in July 1949 as provided under. They shall take the S. E. Examination after putting in an extra term, in September 1950. In this S. E. Examination the paper in Heat Engines I will include the syllabus in Mechanical Engineering for F. E. and the paper in Electrical Engineering II will include syllabus for Electrical Engineering I for F. E. This batch will be admitted to the B. E. course in November 1950, and will take the B. E. examination in September 1951.

O. 316. Candidates who have passed B. E. Final Part I and B. E. Previous Part II in 1949 will complete their course in accordance with the old Ordinances as provided under. They will appear for B. E. Final Part II in April 1950, and in April 1951 respectively. They shall undergo practical training during the fifth year of the old course for a period of six months (140 working days minimum) duly approved by the Principal of an Engineering College before they are admitted to the B. E. degree.

O. 317. The dates of award of B. E. degree for the different batches during the period of transition will be as follows:—

Year in which admitted	Date of final examination.	Date of Completion of practical training.	Revised,
1946 July	1950 April	1950 Nov.	Old Ordinances (revised).
1947 July	1951 April	1951 Nov.	-do-
1948 July	1951 Sept.	1952 Nov.	New Ordinances (transitory).
1949 July	1952 April	1953 April	New Ordinances.

O. 318. Candidates who fail in the examinations conducted under old Ordinances will join as regular students under the new Ordinances in the corresponding class and appear in the next examination as regular candidates.

O. 319. 1. There shall be a Board of Examiners in Engineering consisting of one chairman, two members from each affiliated college, and two external examiners. The Dean of the Faculty of Engineering shall be *ex-officio* chairman of the Board.

2. Each group of papers shall be set by at least two examiners out of whom ordinarily one shall be an external examiner, and one an internal examiner. Each paper shall be set by both the examiners in collaboration. The Board of Examiners shall act as Moderation Board in respect of all question papers.

3. Practical examinations in each Practical subject shall be conducted by two examiners—one internal and one external. The examination shall be in the form of *vive voce* and oral test, and valuation of the laboratory records and sessional work done during the year by the candidate.

B—SCHEME OF EXAMINATIONS

R. 34. First Examination in Engineering (F.E.)

Syllabus No.	Group	Subject.	Time.	Maximum Marks.
1.	I (a)	Mathematics I.	3 hrs.	100
2.	I (b)	Mechanics.	3 hrs.	100
3.	II (a)	Engineering Physics.	3 hrs.	100
4.	II (b)	Engineering Chemistry.	3 hrs.	100
5.	III (a)	Machanical Engineering	3 hrs.	100
6.	III (b)	Electrical Engineering I.	3 hrs.	100
7.	IV (a)	Civil Engineering.	3 hrs.	100
8.	IV (b)	Surveying.	3 hrs.	100
9.	V (a)	Machine Drawing.	4 hrs.	100
10.	V (b)	Practical Geometry	3 hrs.	100
				Total. 1000

Practical including sessional.

1. Engineering Chemistry Laboratory.	50
2. Engineering Physics Laboratory.	50
3. Applied Mechanics Laboratory.	50
4. Surveying-Field work & Plotting	100

5. Practical Geometry.	100	
6. Building Drawing.	50	
7. Machine Drawing.	100	
8. Workshop Practice.	100	600
General Fitness for the Profession		200
Grand Total.		1800

1. The marks for general fitness shall be determined by the principal of the college concerned.
2. For a pass, a candidate must obtain at least 35 per cent of the total marks in each paper, 60 per cent in each practical and 50 per cent of the Grand Total.

R. 35. Second Examination in Engineering (S. E.)
Written Papers.

Syllabus No	Group.	Subject.	Time.	Maximum Marks.
11.	I (a)	Mathematics II	3. hrs.	100
12.	I (b)	Theory of Machines I.	3. hrs.	100
13.	II (a)	Strength of Materials & Theory of Structures I.	3. hrs.	100
14.	II (b)	Graphic Statics	4. hrs.	100
15.	III (a)	Hydraulics & Hydraulic Machinery	3 hrs.	100
16.	III (b)	Heat Engines I.	3 hrs.	100
17.	IV (a)	Electrical Engineering II.	3 hrs.	100
18.	IV (b)	Electrical Measurements & Measuring Instruments.	3 hrs.	100
19.	V (a)	Workshop Technology	3 hrs.	100
20.	V (b)	Machine Drawing & Design.	4 hrs.	100
Total.				1000

Practical including sessional.

1. Mechanical Engineering Laboratory.	100
2. Electrical Engineering Laboratory.	100
3. Machine Drawing and Design.	100
4. Electrical Drawing.	50

5. Graphic Statics.	100	
6. Workshop Practice.	150	600
General Fitness for the Profession.		200
Grand Total		1800

1. The marks for general fitness shall be determined by the principal of the college concerned.
2. For a pass, a candidate must obtain at least 35 per cent of the total marks in each paper, 60 per cent in each practical, and 50 per cent of the Grand Total.

R. 36. Bachelor of Engineering Examination (B. E.)

BRANCH—MECHANICAL ENGINEERING. WRITTEN PAPERS.

Syllabus No.	Group	Subject	Time	Max. Marks:
21.	I (a)	Strength of Materials & Theory of Structure II.	3 hrs.	100
22.	I (b)	Theory of Machines II.	3 hrs.	100
23.	II (a)	Generation and Utilisation of Electric Power.	3 hrs.	100
24.	II (b)	Hydraulic Machinery & Water Power Engineering.	3 hrs.	100
25.	III (a)	Heat Engines II.	3 hrs.	100
26.	III (b)	Automobile Engineering & Refrigeration.	3 hrs.	100
27.	IV (a)	Engineering Economics & Industrial Managements	3 hrs.	100
28.	IV (b)	Industrial Plants & Engineering Production.	3 hrs.	100
Total.				800

Practical including sessional

- | | |
|---------------------------------------|-----|
| 1. Mechanical Engineering Laboratory. | 200 |
| 2. Electrical Engineering Laboratory. | 100 |

3. Mechanical Engineering Design.	200
4. Structural Engineering Design.	100

 Total 600

General Fitness for the Profession.	200
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 Grand Total 1600

1. The marks for general fitness shall be determined by the principal of the college concerned.
2. For a pass, a candidate must obtain at least 35 per cent of the total marks in each paper, 60 per cent in each practical, and 50 per cent of the Grand Total.

Bachelor of Engineering Examination (B. E.)

BRANCH—ELECTRICAL ENGINEERING

Syllabus No	Group	Subject	Time	Maximum Marks.
21.	I (a)	Strength of Materials and Theory of Structures II.	3 hrs.	100
24.	II (b)	Hydraulics & Water Power Engineering.	3 hrs.	100
25.	III (a)	Heat Engines II.	3 hrs.	100
27.	IV (a)	Engineering Economics & Industrial Management.	3 hrs.	100
29.	V (a)	Transmission & Distribution of Power.	3 hrs.	100
30.	V (b)	Generation and Utilisation of Power including traction	3 hrs.	100
31.	VI (a)	Electrical Machinery.	3 hrs.	100
32.	VI (b)	Communication Engineering Telephony, Telegraphy & Wireless.	3 hrs.	100
				<hr/> Total 800

Practical including sessional

1. Electrical Engineering Laboratory.	200
2. Mechanical Engineering Laboratory	100
3. Electrical Engineering Design.	200
4. Installation Engineering Design.	100

 Total 600

General Fitness for the Profession.	200
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 Grand Total 1600

- 1 The marks for general fitness shall be determined by the principal of the college concerned.
- 2 For a pass a candidate must obtain at least 35 per cent of the total marks in each paper, 60 per cent in each practical, and 50 per cent of the Grand Total.

R. 37. For the purpose of classification, the following scheme will be adopted. A candidate will be awarded:—

F. E. First class if he secures 66 per cent or 1188 marks, out of the total 1800 marks, and Second class if he secures 50 per cent or 900 marks.

S. E. First class if he secures 66 per cent of the aggregate total of F. E. and S. E. marks i. e. 2376 out of 3600, and Second class if he secures 50 per cent or 1800 marks.

B. E. A degree with Honours if he secures 75 per cent of the aggregate total of F. E., S. E. and B. E. namely 3900 marks out of 5200.

First class if he secures 66 per cent of the aggregate total viz. 3432 marks and Second class if he secures 50 per cent of aggregate total viz. 2600 marks.

R. 38. If a candidate fails in one written paper only in an examination, and if he gets an aggregate total of 55% he shall be permitted to keep terms in the next higher class. He shall appear and pass in the paper in which he has failed along with the next higher examination.

R. 39. There shall be no supplementary examination for F. E. and S. E. There shall be a supplementary examination in September for B. E. only.

R. 40. Candidates who have failed in the B. E. Examination but who have passed in all practicals and obtained 55% in the aggregate shall be exempted from re-examination in the papers in which they have passed and shall be required to pass the examination in the rest of the papers only.

R. 41. Candidates who have passed in all Practical, and who fail in written papers only shall be permitted to appear as private candidates at the next examination without putting in terms at college. They shall be declared to have secured a "pass" class only

CHAPTER XXXVII

EXAMINATIONS:- FACULTY OF EDUCATION

A—Ordinances for admission of students to the examinations of the faculty.

TEACHERS' TRAINING CERTIFICATE EXAMINATION.

O. 320. Before entering upon the courses of study prescribed for the Certificate of Teachers' Training, every candidate shall be required to have passed the Intermediate Examination in Arts, Science or Commerce of the University or an examination which by Ordinances is declared equivalent thereto, or a higher examination.

O. 321. The courses of study shall be of one academical year.

O. 322. Institutions for Teachers' Training shall be separate from institutions preparing for the Intermediate Examination.

O. 323. Wherever there is an institution for training teachers, there shall be at least one practising school under the control of the Head of the Education Department, which controls the training institution.

O. 324. A candidate who fails in Theory or in Practice or in both at the Teachers' Training Certificate Examination of the University from a recognised institution, may be readmitted to any subsequent examination in Theory or in Practice or in both, held within a period of three years from the date of his first appearance at the examination, without attending a further course at a college, and if successful in this examination, shall be awarded a certificate; provided that a candidate failing in practice shall be allowed this concession only if he has served as a teacher for six months continuously in a recognised school in the session immediately preceding the examination in which he wishes to appear. Applications of all such candidates shall be forwarded by the principals of the colleges from which they failed.

BACHELOR OF EDUCATION

O. 325. A candidate who, after taking the Bachelor's or Master's degree of this University, or some other Indian University recognised for the purpose by the Syndicate has completed a regular course of study in a college affiliated or recognised for the purpose for one academical year and has during the course of the year delivered at least 60 lessons in a

recognised school under the supervision of the staff of the college may be admitted to the examination for the degree of Bachelor of Education.

Note.—A person who passes the B. A. Examination in English only or takes the Master's degree in a language after passing the B. A. Examination in English only shall not be eligible for admission to the examination for the B. Ed. degree

O. 326. The examination shall be conducted by means of papers and shall include a practical test.

O. 327. Every candidate shall be required to show a competent knowledge of the following:—

PART I

- (1) Principles of Education.
- (2) School Organisation and Hygiene.
- (3) Methods of teaching—
 - (a) General Methods;
 - (b) Methods of Teaching school subjects.
- (4) History of Education.

PART II

- (5) Practical skill in Teaching.

O. 328. A candidate may in addition offer a special course in the methods of teaching a prescribed high school subject.

O. 329. Every candidate shall be required to have undergone a course of training in (a) Physical Education, and (b) Educational Hand-work and gardening

Women candidates may be exempted from (a) above.

R. 42 B.—SCHEME OF EXAMINATION TEACHERS' TRAINING CERTIFICATE EXAMINATION.

The following shall be the maximum and minimum number of marks assigned to the various subjects for the Teacher's Training Certificate Examination of the University.

No	Subject.	Paper.	Time in Hours.	Marks for written examina- tion	Marks for Practical Examina- tion.	Mini- mum Pass marks.
THEORY						
1.	Principles of Education (including an elementary knowledge of Educational Psychology)	First Paper	3	100	}	99
2.	Methods of Teaching	Second Paper	3	100		
3.	School Management and Hygiene	Third Paper	3	100		
PRACTICAL						
4.	Practical Examination in Teaching				200	80

Note—(1) The minimum percentage of marks required for a pass in the first, second and third divisions is 60, 45 and 33 respectively in the aggregate for the theoretical examination and 65, 50 and 40 respectively for the practical examination

(2) The result of the theoretical and practical examinations shall be declared separately.

R. 43. B. Ed. Examination

The Division at the B. Ed. Examination shall be assigned separately for Theory and Practice as follows:—

First Division	60 per cent	}	of the aggregate marks in theory & practice separately.
Second Division	48 per cent		

All the rest in the Third Division if they obtain the minimum pass marks as set forth below:—

The examination shall comprise four papers and a practical test—

	Marks	
Paper I Principles and Psychology of Education.	100	}
Paper II School Organisation and Hygiene.	100	
Paper III Methods of Teaching— Part I—General	40	
Part II—Methods of teaching school subjects—English, History, Geography, Mathematics, Sciences, Anatomy, Physiology & Hygiene, Modern Indian languages.	60	
	100	
		Minimum pass marks 36 per cent, with a minimum of 25 per cent in each paper.

NOTE.—In Part II, two questions shall be set on each of these subjects and every candidate shall have to attempt at least three such questions.

Paper IV History of Education.	100
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Practical Test.

200 } Minimum pass
marks 80

- NOTES.—(1) Every candidate shall give satisfactory evidence of ability to manage a class and shall give two lessons in subjects specified in Part II of Paper III in the presence of the examiners.
- (2) The record of practical work in the college will be taken into consideration while assigning marks for practical test.
- (3) For this purpose, the Head of the Training College shall maintain a complete record of marks obtained by each candidate in all lessons given by him.
- (4) The Board of Practical Examiners shall consist of two external examiners and the principal of the college concerned.

Special Paper.

Methods of teaching special subject—Questions on this paper will be designed to test the candidate's ability to teach that subject and may include test of the subject matter as well.

The paper will consist of 100 marks and the qualifying marks in this paper shall be 40 per cent, and the record of the candidate's sessional work will be submitted to the examiner and taken into consideration by him at the time of determining his award.

NOTE.—Candidates offering special paper will be required to give one of their lessons on their special subject and must secure at least second division marks in order to qualify.

CHAPTER XXXVIII

EQUIVALENCE OF EXAMINATIONS

Sec. 23A. Academic Council—Functions:—

- (vii) to advise the Syndicate regarding equivalence of examinations and recognition of the examinations of other bodies.

O. 330. Applications from Universities and Boards for recognition of their examinations as equivalent to the examinations of the University shall be considered by the Equivalence Committee.

O. 331. The Equivalence Committee shall consist of:—

1. The Vice-Chancellor.
2. Deans of Faculties.

R. 44. The following examinations are recognised as equivalent to the corresponding examinations of the University:—

- (a) The degree examinations of all Universities represented on the Inter-University Board.
- (b) The Intermediate Examinations of all Universities represented on the Inter-University Board.
- (c) The Intermediate Examination of the Board of High School and Intermediate Education, United Provinces.
- (d) The Intermediate Examination of the Board of High School and Intermediate Education, Rajputana, Central India and Gwalior.
- (e) The Higher School Certificate Examination conducted by the Syndicate of Cambridge University (equivalent to Intermediate).
- (f) The Commercial Diploma Examination of Allahabad University, or the Commercial Diploma Examination of the Board of High School and Intermediate Education, United Provinces (equivalent to Intermediate in Commerce).
- (g) The Intermediate Examination in Commerce of the Board of High School and Intermediate Education, United Provinces.
- (h) The Intermediate Examination in Commerce of the Board of High School and Intermediate Education, Rajputana, Central India and Gwalior.
- (i) The Intermediate Examination in Agriculture of the Board of High School and Intermediate Education, United Provinces.
- (j) The Intermediate Examination in Agriculture of the Board of High School and Intermediate Education, Rajputana, Central India and Gwalior.
- (k) The L. Ag. Examination of the Agricultural College, Karpur (equivalent to Intermediate Examination in Agriculture).
- (l) Pre-Engineering Examination of the Delhi Polytechnic (equivalent to the Intermediate in Science Examination.)
- (m) Pre-medical Examination of the Delhi University [equivalent to Inter. in Science (Medical group) of the University.]
- (n) The First Examination conducted by the University of Travancore in the Faculties of Arts and Science (equivalent to the Intermediate Examination in Arts and Science, respectively).

R 45. The following examinations are recognised as equivalent

to the University's High School Examination:—

(1) The High School Examination of the Board of High School and Intermediate Education, United Provinces.

(2) The High School Examination of the Board of High School and Intermediate Education, Rajputana, Central India and Gwalior.

(3) The Matriculation Examinations of the Universities of Allahabad, Bombay, Calcutta, Madras, Andhra, Patna, Banaras (Admission Examination), and Aligarh (High School Examination).

(4) S. S. L. C. Examination of Madras University.

(5) The Cambridge School Certificate (formerly called Senior Local) Examination, provided that a candidate has passed in five of such subjects as are recognised for the High School Examination of the University.

(6) The Higher Secondary Examination of the Board of Higher Secondary Education, Delhi Province.

(7) The Diploma Examination of the Chiefs' colleges.

(8) The High School Examination for European Schools in the Central Provinces and other provinces.

(9) The High School Certificate Examination of the Board of High School Education, Central Provinces.

(10) The Anglo-Vernacular High School and English High School Examinations of Burma.

(11) The London University Matriculation Examination.

(12) The English School Leaving Certificate Examination of Travancore State.

(13) The High School Leaving Certificate Examination of Hyderabad (Deccan), provided a candidate has passed in class I or class II.

(14) The Higher Secondary Certificate Examination conducted by the Board of Secondary Education, Hyderabad (Deccan), subject to the condition that a minimum of 33 per cent of the marks in each subject has been obtained.

(15) The Secondary School Leaving Certificate Examination of Mysore, provided a candidate has been declared eligible for admission to a University Course.

(16) The Diploma Examination of the Royal Indian Military College, Dehra Dun, so long as the syllabus and the standard of the examination continue to be the same as those of the examinations recognised in the foregoing clause (6).

(17) The High School Examination of the Board of Secondary Education, Delhi, provided a candidate has passed the examination in five subjects excluding (except in the case of women candidates) Domestic Science.

(18) The Matriculation Examination of the Punjab University, provided the candidate has passed the examination in five subjects.

(19) The Secondary School Leaving Certificate Examination of the Government of Bombay on the same terms on which the Bombay University has recognised it.

(20) The Cochin State S. S. L. C. Examination subject to the condition that the candidates passing the examination are held eligible for admission to Madras University.

(21) The S. L. C. Examination conducted by the Government of Nepal, provided a candidate has passed the examination in class I or class II.

(22) The High School Examination conducted by the Board of Intermediate and Secondary Education, Dacca.

(23) The Indian Air Force Matriculation Test.

(24) The Indian Army Special Certificate of Education.

(25) Qualifying Examination of the Delhi University for admission to the three year degree course of the Delhi University.

Provided that students who have passed the Cambridge School Certificate Examination in five such subjects as are recognised for the High School Examination of this University may be admitted to the Senior Intermediate class of the academical year following their pass in the Cambridge Examination.

Provided further that students who have passed the Qualifying Examination for admission to the three year degree course of the Delhi University or the Higher Secondary Examination of the Board of Higher Secondary Education, Delhi, may be admitted to the Senior Intermediate class, provided they pass a test by the principals of colleges to which they seek admission.

CHAPTER XXXIX

HIGH SCHOOL EDUCATION.

Sec. 24 G. (1) The Board of High School Education shall consist of the following, namely:—

- (i) the Vice-Chancellor;
- (ii) the Director of Education in Rajasthan;
- (iii) three members of the Senate elected by the Senate;
- (iv) two members of the Syndicate elected by the Syndicate;
- (v) the Deans of the Faculties of Arts, Science and Commerce;
- (vi) seven heads of institutions having high school classes to be nominated by the Vice-Chancellor, of whom five—three from Government institutions and two from private institutions, shall be headmasters of high schools and two—one each from Government and private institutions—shall be principals of intermediate colleges;
- (vii) one member from among the principals of Training Colleges, affiliated to the University to be nominated in rotation by the Vice-Chancellor, one each from Government and private institutions;
- (viii) two women members—one each from Government and private institutions—to be nominated by the Vice-Chancellor in rotation from amongst the Heads of Women's Colleges which include High School education or Heads of Girls' High Schools, and
- (ix) three persons associated with any educational work or institution in Rajasthan to be nominated by the Government.

(2) Members of the Board of High School Education, other than *ex-officio* members, shall hold office for a period of three years.

Sec. 24 H. (1) The Board of High School Education shall advise the Syndicate in all matters relating to high school education.

recommendations of the Board shall first be considered by the Syndicate and such of them as the Syndicate might think proper shall then be referred to the proper officer or authority of the University.

(2) Subject to approval by the Syndicate, the Board shall make rules relating to—

- (i) recognition of high schools;
- (ii) residence of students of high schools;
- (iii) admission of internal and external students to the High School Examination;
- (iv) qualifications of teachers of high school (IX and X forms) classes; and
- (v) other allied matters.

Sec. 24 E. There shall be a Board of Studies for each subject or group of subjects.

Sec. 24 F. (1) The Boards of Studies shall recommend courses of study and curricula in their respective subjects and shall advise in all matters relating thereto referred to them by the Syndicate or the Academic Council or the Faculty concerned.

Sec. 24 E. (5) A Board when dealing with a subject or subjects for high school education shall co-opt a member, who shall be head master of a high school of not less than ten years' teaching experience in the subject.

RULES

(a) Definitions

1. "High School" means an educational institution preparing candidates for the High School Examination of the University and recognised by the University for such a purpose.

2. "Headmaster" means the Head of a High School recognised by the University for the High School Examination

3. "Guardian" means the natural or legal guardian, or a person approved by the head of the institution concerned as the guardian of a student for the purposes of these rules

4. "Private Candidate" means a candidate for the High School Examination who has not, during the session preceding the examination

been studying at an educational institution of any kind.

5. "Regular course of Study" means a course of study prescribed by the University.

6. "Scholar's Register" means the register containing the record of a scholar's progress kept by the institution to which he belongs, in the form approved by the University.

(b) Meetings of the Board

7. The Board shall meet ordinarily in the month of January or February and at such other times as the Vice-Chancellor may direct.

8. All meetings of the Board shall be convened through the Registrar.

(c) Committees

9. The Board shall appoint Committees of Courses for the subjects for which Boards of Studies for degree and post-graduate education have not been constituted.

10. The courses as drawn up by the Boards of Studies or the Committees of Courses shall be submitted to the Board of High School Education at its annual meeting.

11. The courses approved by the Board shall be submitted for final approval to the Syndicate and when it has approved of the same they shall be printed in the prospectus and issued by the Registrar two years before the date of examination for which those courses have been prescribed.

12. If the Board is of opinion that a recommendation made by a Board of Studies or Committee of Courses requires reconsideration, it may refer the matter back to that Board or Committee. After considering the views of that Board or Committee, the Board of High School shall make its own recommendations.

13. A Board of Studies or Committee of Courses may bring to the notice of the Board of High School any matter connected with the examinations or courses in respect of the subject or subjects with which it is concerned.

(d) Recognition of High Schools.

14. An institution desiring to be recognised for the purposes of examination conducted by the University shall, not later than the 1st of September in the year preceding that in which it proposes to open classes in preparation for an examination, apply to the Registrar for permission to open classes. The application shall be submitted through the Director of Education, Rajasthan.

15. Each school applying for recognition for High School Examination shall remit with its application a fee of Rs. 200/- if it is for recognition as a high school; or Rs. 100/- per subject in case it is for recognition in an additional subject or subjects, subject to a maximum of Rs. 200/- provided that the application for recognition in more than one subject is made at one time. No application shall be entertained if the same is not accompanied by the fee as mentioned above.

The above fee shall also be remitted with applications for permanent recognition.

16. Applications for recognition shall set out in detail, the following particulars upon which the Director of Education shall make his report and recommendations:—

- (a) whether there is a real need for the institution in the locality;
- (b) the constitution of the governing body, if any;
- (c) the name of the Manager or Secretary or Correspondent as the case may be ;
- (d) the qualifications and grades of pay and conditions of service of the teaching staff ,
- (e) the subject or subjects of instructions in which the institution undertakes to make provision ;
- (f) the accommodation provided in class rooms and in hostels;
- (g) the provision made for the health, recreation and discipline of scholars ,
- (h) the financial position of the institution and the source and amount of income ;
- (i) the scale of fees charged and the provision, if any, for the admission of poor scholars ; and
- (j) the number of scholars in each class or section of a class.

17. On receipt of this application the Registrar shall submit it to

the Board of Inspection which shall deal with the application according to the provisions of the Act.

18. Any other information which the University may call for in connection with the application shall be supplied by the institution through the Director of Education.

19. In forwarding the inspection report to the University the persons appointed by the Board of Inspection to conduct enquiry in respect of an application for recognition, shall state whether and in what subjects or on what conditions recognition should, in their opinion, be granted.

20. No institution shall be recognised or continue to be recognised unless it complies with the following requirements:—

- (a) that it shall be under the inspection of the inspecting officers of the Education Department of the State and shall be open to inspection by such other person or persons as the University may, for purposes of formal inspection, depute independently or associate with such officers;
- (b) that the middle and primary sections of the school continue to be recognised by the Department of Education;
- (c) that rules and regulations issued by the Director of Education so far as they are not inconsistent with the provisions made by the University, are duly followed;
- (d) that all information and returns called for from the institution by the University or by the Director of Education shall be duly furnished by the head of the institution;
- (e) that it shall not prepare and send up candidates for a rival examination when an examination of the same nature and similar standard is held by the University;
- (f) that it shall make suitable arrangements for health and recreation of its pupils, which will include the following:—
 - (i) proper sanitary arrangements;
 - (ii) medical inspection of its pupils at least once a year followed by proper medical treatment, where necessary,
 - (in) physical education of its pupils consisting of out-door games or physical exercises;

N. B.—Clause (ii) shall be optional for girls only.

- (g) that it shall provide accommodation at the rate of not

less than 12 sq. feet of floor space for each scholar in a class room;

- (h) that it shall limit the admission into any class or section of a class to the number of scholars for which there is accommodation in the class room, subject to a maximum of 35 scholars in each class or section of a class:

Provided that if there is adequate accommodation and adequate staff to cope with the extra work involved in the increase in the number of scholars, and the Director of Education is satisfied that the efficiency of work would not suffer, the number of scholars in the class or a section of a class may be not more than 45;

- (i) that it shall follow such rules regarding the admission and migration of scholars as may be laid down by the University.

21. If satisfied that an institution is deserving of recognition, the University shall direct the Registrar to enter its name upon a list of recognised institutions to be kept by him, and the Registrar shall inform the institution through the Director of Education in which subject and on what conditions it has been recognised for the High School Examination.

22. Where an institution desires to add to the subjects of instruction in respect of which recognition has been granted, the procedure prescribed by the foregoing rules shall, as far as may be, followed.

23. An institution recognised by the University for the High School Examination shall submit to the University through the Director of Education, annual returns giving the personnel and pay of the teaching staff. Any change in the management shall be communicated as soon after the change as possible.

24. The following minimum emoluments are recommended for teachers in recognised high schools:—

Headmaster	...	...	Rs. 250-10-350.
Graduate teachers possessing training qualifications	...	...	Rs. 100-8-180-10-250.
Untrained graduate teachers	...	...	Rs. 80-5-120-8-160.
Vernacular and classical language teachers possessing Oriental qualifications	...	...	Rs. 60-5-120.
Drawing Masters and Manual Training Instructors	...	...	Rs. 60-5-120.
Physical Instructors who are graduates	...	...	Rs. 100-8-180-10-250.
Physical Instructors who are non-graduates	...	..	Rs. 60-5-120.

Music teachers, graduate in Music from a recognised college	... Rs. 80-5-120-8-160.
Music teachers other than graduate in Music	... Rs. 60-5-120.
Domestic Science teachers	... Rs. 60-5-120 or 80-5-120-8-160 (for those possessing the diploma from the Lady Irwin School, Delhi).

25. The Director of Education, Rajasthan, shall forward to the Registrar copies of all notifications from a recognised institution communicating changes in management and in the number, qualifications, and salaries of the teaching staff, the result of which in his opinion, affects the fitness of the institution for continued recognition by the University.

26. The University shall have every recognised high school periodically inspected. Such inspection shall be held once in every 5 years and at shorter intervals, if necessary. The Board shall select the institutions for such inspections in each year and the inspections shall be conducted by the inspectors appointed by the Board of Inspection. The reports of the inspection with the opinion of the Board of Inspection shall be submitted to the Syndicate which will take them into consideration at its next meeting and inform the institution of its decision through the Director of Education.

27. If the Director of Education is of opinion that any institution recognised by the University has, by reason of deterioration, ceased to meet the requirements of the University, he shall make a report of the same to the University. On receipt of this report, the University may institute such enquiry as it thinks fit. The report of the enquiry will be submitted to the Board of High School and thereafter to the Syndicate with the opinion of the Board which will take it into consideration at its next meeting and the institution informed about the decision taken through the Director of Education.

28. In any case in which the University may decide that action is necessary upon the report, it will first call upon the institution, through the Director of Education, to show cause why such action should not be taken.

29. No action shall be taken by the University on any report by the Director of Education without first giving the institution concerned an

opportunity of making any representation, it may wish to make, through the Director of Education, to the University.

30. The University shall, if satisfied that the institution is no longer fit for recognition, direct the Registrar to issue a warning to the governing body, through the Director of Education, that unless within a period fixed by the University the institution removes the defect or defects, to which attention has been called, it will be struck off the list of recognised institutions, or that recognition will be withdrawn in one or more optional subjects. The University shall have power to extend from time to time the period so fixed.

31. If within the time fixed by the University or within such further time as may be allowed by it, the institution fails to satisfy the University that it is conforming to its requirements, the University shall strike the institution off the list of recognised institutions, or shall withdraw recognition in one or more optional subjects.

32. The University may, at a subsequent date after report by such person or persons as it deems fit, reinstate an institution on the list of recognised institutions, or if recognition was withdrawn in one or more optional subjects, restore to it the privileges of preparing candidates therein.

33. No institution shall be recognised in any branch of experimental science or vocational subject unless it satisfies the University:—

- (a) that the number of students assigned to a single teacher in practical work at one time does not exceed 20,
- (b) that suitable laboratories for each branch of experimental science are provided, and each of them is adequately equipped,
- (c) that laboratory journals are regularly maintained by the students and kept for inspection, and
- (d) that workshops are provided wherever vocational education is given.

(e) Residence of Students.

34. Where accommodation is available, every student of a recognised institution shall reside in a hostel provided by it, or in a hostel recognised by the head of the institution, or with parent or guardian.

35. Where no accommodation is available in a recognised hostel, the head of an institution may permit a student or students to

live in lodgings reserved by the keeper thereof for students of recognised institutions provided:—

- (a) that the lodgings are open to inspection by the head of the institution concerned or by any other person or persons deputed by the University for the purpose; and
- (b) that the keeper is willing to submit to the requirements regarding supervision of students laid down by the head of the institution or by the Director of Education.

(f) Private Candidates.

36. Private candidates shall be eligible to appear at the High School Examination on the conditions laid down in these Rules.

37. A candidate who desires to offer himself for examination as a private candidate should send in an application in the prescribed form together with the examination fee so as to reach the Registrar not later than the 1st of October, or by 16th of October if accompanied by a late fee of Rs. 5/-, preceding the date fixed for the next ensuing examination, through the Inspector of Schools of the division concerned.

He should also forward the original copy of the Scholar's Register granted to him by the institution, if any, at which he last studied.

Provided that a candidate, who has appeared and failed at the High School Examination of the University as a school candidate from a recognised institution, may send his application for permission to appear at that examination as a private candidate signed by the headmaster of the school from which he failed and countersigned by the Inspector of Schools of the division concerned. Such a candidate will appear at the examination at a place where the school candidates from the institution, from which he failed, will appear.

N. B.—In the case of women candidates, the application may be forwarded through the principal of a college or the headmaster of a recognised high school.

38. All private candidates other than women candidates appearing at the examination shall affix to their application forms, for permission to appear at the examination, a miniature size (bust) of their photographs duly attested by the officers forwarding the application forms.

39. Private candidates who have failed to obtain promotion to the highest class of any school (i.e. those who have been detained in class IX) shall not be admitted to the next ensuing High School Examination.

Every year in the beginning of the session, the heads of institutions under the University should send to the Registrar of the University a list of students, who have been detained in class IX containing the student's name, his age, his father's name, place of residence and guardian's name.

40. No student who has left an anglo-vernacular school at a stage earlier than the high section shall be permitted to appear at the High School Examination as a private candidate in a year earlier than that in which he would have appeared, if he had continued his studies at a recognised institution upto the High School Examination. This would not apply to a candidate who has not attended a school for at least five years preceding the examination at which he wants to appear.

41 Applications from intending private candidates shall be referred to a committee appointed to scrutinize applications from private candidates. The Vice-Chancellor after considering the recommendations of the committee, shall grant or reject the applications.

42. Where a private candidate's application for admission to the examination of the University is rejected, the examination fee prescribed for the examination, less Re 1/-, shall be refunded to him. In the case of candidates whose applications show false statements, an additional penalty, according to the seriousness of the offence upto the extent of the forfeiture of the whole fee, may be levied.

43. Private candidates who have failed at an examination and desire to offer for the next examination subjects other than those previously offered may be allowed to do so

*44. Private candidates shall not be allowed to offer such subjects

*Note—The following subjects will be deemed subjects which involve practical work for the purposes of this rule—

1. Physics and Chemistry.
2. Biology.
3. Chemistry & Biology.
4. Agriculture.
5. General Engineering Science
6. Engineering Drawing.
7. Wood workshop practice
8. Engineering workshop practice
9. Hand spinning & weaving.
10. Elementary Agriculture,
11. Metal work
12. Wood work.
13. Tailoring.

for their examination as involve practical work, even if no practical examination is held in those subjects.

45. Notwithstanding any thing contained in the above rule, a private candidate can, however, be permitted to offer such a subject or subjects provided that:—

- (i) he has put in a satisfactory course and completed all practical work and written work prescribed in the subject for the examination at an institution recognised by the University in that subject and submits a certificate to that effect from the head of that institution. For the purposes of a satisfactory course, 75 per cent attendance at lectures and practical work in the laboratory, farm or workshop, of the institution, as the case may be, will be necessary.

or

- (ii) he had studied the subject as a regular student at an institution recognised by the University but had failed with that subject at the examination of the University of a previous year and provided that he passed in the practical examination of that subject if a practical examination was held in which a pass was necessary.

46. Candidates residing outside the territorial jurisdiction of the University shall not be permitted to appear at the examination as private candidates.

47. Private candidates shall not be allowed to offer for their examination any subject, even if the subject is recognised for the examination, which is not being taught in a recognised institution or in which no institution is recognised.

48. Notwithstanding anything contained in the above rule, private women candidates, who offer Domestic Science, Physiology & Hygiene shall be allowed to appear at the examination.

49. Notwithstanding anything contained in these rules, any woman candidate, who is not studying at a recognised institution, may be admitted as a private candidate to the examination provided that (1) candidates who have failed to obtain promotion to the highest class of any school (*i.e.* those who have been detained in class IX) shall not be admitted to the next ensuing examination; and (2) a candidate offering Physics and Chemistry, Biology, Chemistry and Biology and Agriculture submits a

certificate from the head of a recognised institution to the effect that a satisfactory course in practical work in the science subjects, offered by her, has been gone through by her in the laboratory of that recognised institution.

50. A candidate who has passed a public *examination in an Oriental language (Sanskrit, Persian or Arabic), or in advanced Hindi or Urdu, recognised by the University, may be admitted as a private candidate to the High School Examination in English only (i. e. in all the papers of English prescribed for examination under the compulsory corps as well as optional corps) and shall, if successful, be entitled to a certificate of having passed the examination in English only. Similar concession may be given to Drawing Masters, Manual Training Instructors and the teachers of vocational subjects, in institutions recognised by the University as well as in the Normal Training Schools recognised by the Education Department, Rajasthan.

(g) General rules of Examination

51. The examination shall be held at such centres and on such dates and at such times as the University may from time to time appoint.

*N B — The following examinations are recognised by the University as Public Examinations in Oriental languages:—

- (1) *Mauvi*, *Alim*, *Mulla* (now defunct) and *Fazil* in Arabic and *Munshi* and *Kamil* in Persian conducted by the Education Department of the United Provinces, the Diploma Examinations in Arabic and Persian conducted by the Lucknow University and the *Munshi* (Proficiency in Persian), *Munshi Alim* (High Proficiency in Persian), *Munshi Fazil* (Honours in Persian), *Mauvi* (Proficiency in Arabic), *Mauvi Alim* (High Proficiency in Arabic), and *Mauvi Fazil* (Honours in Arabic), conducted by the Punjab University.
- (2) The Sanskrit examinations conducted by the Banaras Government Sanskrit College, the Banaras Hindu University, the Punjab University, the Education Department, Jaipur State, and the Sanskrit Title Examination of the Calcutta Sanskrit Association.
- (3) The examination in advanced Urdu conducted by the Education Department of U. P. and the *Adib* (Proficiency in Urdu), *Adibe Alim* (High Proficiency in Urdu), and *Adibe Fazil* (Honours in Urdu), conducted by the Punjab University.
- (4) The examination in advanced Hindi conducted by the Education Department of U. P. and the *Rattan* (Proficiency in Hindi), *Bhushan* (High Proficiency in Hindi), and *Prabhakar* (Honours in Hindi), conducted by the Punjab University.
- (5) The *Visharad* (Madhyama) Examination held by the All-India Sahitya Sammelan, Allahabad.
- (6) The *Vidushi* (ordinary), *Vidushi* (Honours) and the *Vidyavinodini* Examinations held by the Prayag Mahila Vidyapeetha, Allahabad.

52. The tests at the examination may be written or partly oral or practical and partly written. Oral and practical tests shall be carried out by the examiners appointed by the University in such manner as it may prescribe from time to time. Written tests shall be by means of question papers, and the question papers shall be given out simultaneously at every centre at which the examination is being held.

53. Every candidate for admission to the examination from an institution recognised by the University shall, not later than 15th December each year—

- (a) pay the fee prescribed for the examination together with a fee of Rs. 1/- for communicating paperwise marks;
- (b) state the optional subjects in which he desires to present himself for examination; and
- (c) furnish the Registrar with a certificate showing:—
 - (i) that he has completed a regular course of study in a recognised institution,
 - (ii) in the case of candidates offering subjects which involve practical work, that he has actually performed the experiments laid down in the syllabus.

54. The candidates shall pay such examination fees, as are laid down in the relevant Statutes.*

55. A candidate who fails to pass or is unable to present himself for the examination shall not receive a refund of his fee.
Provided.—

- (1) that if a candidate dies before the commencement of the examination, his examination fee shall be refunded.

- * (1) High School Examination...Rupees 20/- by each candidate from a recognised institution,
- (2) High School Examination...Rupees 25/- by each private candidate,
- (3) Examination in one subject only. ... Rupees 8/.
- (4) Examination in more than one subject ... Rupees 5/- for each subject,
- (5) Fee for checking the result of failed candidates. ... Rupees 10/- per candidate,
- (6) Fee for checking the result of failed candidates appearing in one subject only. ... Rupees 4/- per candidate,

- (2) that if a candidate is detained from appearing at the examination on account of shortage in percentage of attendance, his examination fee shall be refunded.

56. A candidate, who from sickness or other adequate cause is unable to present himself for an examination, may be permitted by the University to present himself at the next ensuing examination or failing that also at the next following examination without payment of any further fee, his fee being held over for the next examination. In such a case, the application of the candidate, supported by a proper medical certificate or other evidence to show that his absence from the examination was unavoidable, must reach the Registrar within one month after the commencement of the examination, at which the candidate is unable to appear, and it should be sent through the officer who originally forwarded his application for appearing at the examination:

Provided that this concession does not apply to a candidate who absents himself from a part of the examination.

57. The Registrar shall, after satisfying himself that a candidate has complied with all the requirements for admission to the examination, furnish the candidate with a card of admission, on presentation of which to the superintendent of the examination centre, the candidate shall be permitted to sit for the examination.

58. Notwithstanding anything contained in these rules no candidate, who has been expelled or is still undergoing rustication, shall be admitted to the examination.

59. The Registrar, if satisfied that a candidate's admission card has been lost or destroyed, may grant a duplicate card on payment of a further fee of Re. 1/-.

60. Except when otherwise provided in these rules, the names of candidates who have passed the examination shall be placed in three divisions, and further, the names of students from the recognised institutions shall be grouped according to the institution in which they have studied.

61. A candidate who has failed at the examination may present himself for one or more subsequent examinations, provided that he shall on each and every such occasion satisfy the University that he has fulfilled the conditions laid down in the rules for the admission of candidates to the examination.

62. A candidate who has appeared at an examination of the University may apply to the Registrar for the scrutiny of his marks and the rechecking of his result in accordance with the rules framed by the University.

63. There shall be in the month of August a Supplementary Examination of the candidates who fail in one subject only and (a) obtain at least 40% of the aggregate number of marks allotted to the remaining subjects or (b) obtain at least 20% marks in the subject in which they fail, at the immediately preceding High School Examination; and such candidates as may desire to take the Supplementary Examination may be provisionally admitted at their own risk to join the next higher class in an affiliated college of the University, and count attendance in case they are successful at the Supplementary Examination; provided that if a candidate fails in a subject which involves Practical Examination, he shall have passed at the Practical Examination in order to qualify himself for admission to the Supplementary Examination, and such a candidate shall not be examined at the practicals again. Candidates shall be declared to have passed the examination if they secure 33% marks in the subject in which they appear at the Supplementary Examination. No division shall, however, be awarded to such candidates.

Attendance of candidates who join the next higher class on the declaration of the result of the Supplementary Examination, and of those who, having failed at the Supplementary Examination, rejoin a high school may be calculated from the date of admission but not later than a week after the declaration of the Supplementary Examination result.

* Rules for the scrutiny of marks and the checking of the results of candidates *vide* Rule 62:..

1. Any candidate who has appeared at the examination may apply to the Registrar for the scrutiny of his marks and the re-checking of his result.

2. Such applications must be made within two months from the date of the publication of the results by the University.

3. All such applications must be accompanied by the prescribed fee which must be sent to the Registrar by Money Order.

4. No candidate shall be entitled to a refund of the fee unless, as a result of the scrutiny, a mistake affecting his examination result as published in the Rajasthan Gazette is detected.

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to the candidate.

6. The work of scrutiny does not include re-examination of the
and the marks entered in the
there has been any mistake in
or in the form of omitting

64. A candidate who desires to enter for Supplementary Examination must submit his application direct to the Registrar in a prescribed form so as to reach him not later than 25th of July each year. The application shall be accompanied by the full fee for the examination and the marks fee of Re. 1/-

65. A candidate who has fulfilled the conditions laid down for admission to the examination will not be detained from appearing at that examination unless the Vice-Chancellor permits the head of the institution concerned to detain him for adequate reasons fully submitted by him in writing to the Vice-Chancellor.

66. Duplicate copies of certificates shall not be granted except in cases in which the University is satisfied by the production of an affidavit on a stamped paper of annas eight, through the headmaster of the school from which the applicant passed the examination or in the case of private candidates through the officer who had forwarded their application forms for permission to appear at the examination, that the applicant has lost his certificate or that it has been destroyed and that applicant has real need for a duplicate copy of his certificate. In such cases a duplicate of a certificate may be granted on payment of a fee of Rs. 5/-.

67. Paper-wise marks obtained by the candidates in each subject shall be communicated to them after the declaration of results, on payment of a fee of Re. 1/- which shall be deposited along with the examination fee.

(h) High School Examination.

68. Every candidate for the High School Examination shall be examined in five subjects included in the compulsory group, and two subjects from the optional groups subject to the proviso mentioned against each group.

Compulsory

1. Hindi.
2. English.
3. General Science
(Physics, Chemistry & Biology-including Hygiene)
4. Social Studies.
5. Elementary Mathematics.

Optionals

Group I. One of the following:—

1. Urdu.
2. Hindi.
3. English.
4. French.
5. German.

Group II. One of the following:—

1. Sanskrit.
2. Persian.

Group III. One or two subjects of the following:—

1. History.
2. Geography.
3. Civics with Indian Administration.
4. Elementary Journalism.

Group IV. Mathematics.

Group V. One or two subjects from the following. —

1. Drawing & Painting.
2. Music.
3. Domestic Science, Physiology & Hygiene.

Group VI. Both subjects to be taken—

1. Mathematics.
2. Physics & Chemistry.

Group VII. Both subjects to be taken:—

1. Physics & Chemistry.
2. Biology.

Group VIII. Both subjects to be taken:—

1. Chemistry & Biology.
2. Agriculture.

Group IX. Two subjects from the following:—

1. Book-keeping & Commercial Geography.
2. Business Methods and Typewriting (English or Hindi).
3. Hindi Shorthand & Hindi Type-writing.

Notes: In case a candidate offers subjects Nos. (2) and (3), he should offer English Typewriting under subject No. (2)

Group X. Any two of the following :—

1. General Engineering Science.

2. Engineering Drawing.
3. Wood-workshop practice.
4. Engineering workshop practice.

Group XI. One of the following vocational subjects, along with Allied Mathematics, Drawing and Accounts:—

1. Hand-spinning & Weaving.
2. Elementary Agriculture.
with (a) Fruit Preservation & Canning, or
(b) Bee-keeping, or
(c) Poultry farming, or
(d) Dairy Farming.
3. Metal work.
4. Wood work.
5. Tailoring.

Candidates offering a subject from this group will not be required to offer a second optional subject.

N. B. (1) Candidates must take up the optional subjects as prescribed above for the examination and no candidate will be examined in more than the prescribed number of optional subjects in addition to the compulsory subjects at one and the same examination, provided that a candidate who has passed the High School Examination of the University may present himself for examination in any subsequent year in one or more optional subjects in which he has not previously passed the High School Examination and such a candidate shall, if successful, be entitled to have an entry made in the certificate already granted to him certifying in which additional subject or subjects he has passed and provided further that if he wishes to appear in a subject or subjects which involve practical work, he should produce satisfactory evidence, that he has completed the practical course prescribed for the subject in a school or college recognised by the University for the high school standard in that subject.

- (2) A candidate who desires to offer more than two subjects from under the optional subjects may, however, be allowed to offer at the most one additional optional subject, with the permission of the headmaster of the school, provided the high school, in which he is prosecuting his studies is recognised in that subject, and the instructions for offering subjects from the groups are complied with. If such a candidate passes in this subject, an entry will be made in his certificate to that effect. In case such a candidate fails in one of the main optional subjects offered by him but passes in the additional optional subject, he would be declared to have passed the examination, treating the additional optional subject as his main optional subject, if he secures at least 40% marks in that additional optional subject.

69. There shall be one paper for each of the compulsory subjects, and two papers in each of the optional subjects except for the following where the number of papers and/or practical is given against each:—

1. Music	One paper & one practical.
2. Domestic Science, Physiology & Hygiene	Two papers and one practical.
3. General Engineering Science, Engineering Drawing, Wood-workshop practice, Engineering Workshop practice	One paper and a practical test.
4. Vocational subjects under Group XI	Two papers and a practical test.

Each paper shall be of 2½ hours duration, and shall carry 50 marks unless otherwise mentioned in the prospectus. Total marks in the subjects which have one paper and one practical, or subjects which have two papers or two papers and one practical shall be 100, equally divided between the papers and practical unless otherwise mentioned in the prospectus. The marks in the vocational subjects under Group XI shall be as follows:—

Paper I	....60 marks
Paper II	....60 marks
Practical	....80 marks
Total	....200

70. A candidate is not entitled to a certificate of having passed the High School Examination unless he qualifies separately in each subject of the compulsory group and each subject of the optional group offered by him thereat. The pass percentage for each subject, or a portion of the subject if so required in the prospectus, shall be 33.

71. Diaries shall be kept by all teachers employed in teaching classes preparing for the High School Examination, showing the work done in class in each subject taught by them and such diaries shall be inspected by the oral or practical examiners or by such other authorities as the University may depute.

72. The question papers set and the written answer-books of all candidates at the terminal examinations shall also be subject to inspection in such manner and by such authorities as the University may direct.

73. The head of the institution shall furnish the oral or practical examiner or such other authority as the University may ap

list of the candidates undergoing examination in the subject or subjects with which he is concerned and shall make an entry against each name regarding the proficiency of the candidate as judged by his record therein during the course of study prescribed for the examination.

74. Candidates for the High School Examination are permitted to answer questions in English, Urdu, or Hindi, in all subjects other than English.

75. Candidates who have passed the Junior Cambridge (Junior Local) Examination in five such subjects (of which one shall be Hindi), as are recognised for the High School Examination of the University, may be admitted to the High School Examination in the academical year following that in which they pass the Junior Cambridge Examination.

(i) Miscellaneous

76. Detailed information regarding the examination shall be given in the prospectus which will be issued annually by the Registrar and may be obtained from the University office on payment of the fixed price.

77. The University shall, from time to time lay down such rules for the admission of students in recognised institutions and for migration of students and prescribe such forms and registers with rules for their maintenance as may be deemed necessary. Such rules and forms shall be appended to these rules and shall be followed and used for the respective purposes therein mentioned.

78. The expression "A regular course of study" means attendance at atleast 75 per cent of the lessons and other teaching in a recognised institution in the subject or subjects for the examination at which the candidate intends to appear, and at such other practical work (such as work in laboratory) as is required by these rules or any other rules in force for the time being.

79. The University shall, for the purposes of a regular course of study, prescribe the minimum* number of meetings of a class that must be held in preparation for the examination.

*1. The minimum number of working days, exclusive of examination days, for which recognised high schools will be open during one academical year, shall be not less than 210.

2. No candidate will be presented for an examination of the University by a recognised institution, unless he has been present for at least 75 per cent of the days for which the institution was open during two academical years in classes IX and X.

**Rules in respect of admission and migration of students
(Vide Rule 77)**

A—The following rules should be observed by all high schools recognised by the University:—

1. A scholar's register* shall be prepared for every scholar joining a high school. The scholar's register must be written either by the headmaster himself or under his superintendence, but the 'conduct and work' record must always be filled in by him.

2. Successive numbers must be allotted to scholars on their admission, and each scholar shall retain his number throughout the whole of his

3. Excepting private candidates, no candidate shall be presented for an examination unless he has attended 75% of the periods devoted to physical training, including attendance at games to the extent of 15 per cent. Wherever possible, military drill (close order drill) shall form part of physical training. Exemption shall not be granted to any student from physical training except on medical grounds.

The minimum number of periods devoted to physical training in a recognised institution during one academical year shall be 100. The period for which a candidate has been declared unfit for physical training shall not be counted for the purpose of calculating his percentage of attendance. For purposes of condonation of shortage in attendance at physical training, such rules as apply for the regular teaching work shall be applied to the physical training also.

4. In the case of failed and detained candidates and of those who having passed the Junior Cambridge [Junior Local] Examination, are admitted to class X of a recognised high school, the percentage will be calculated for one academical year only. The course for the high school being a two years' course in each subject, a change of subject in class X is not permissible.

5. In exceptional cases where a candidate has migrated from one institution to another institution, both being within the jurisdiction of the University, and if the optional subject taken by him is not taught in the latter institution, the head of the institution may permit a change of subject with the permission of the University. The attendance put in by a candidate in a subject which he subsequently changes with the permission of the University should be counted along with the attendance in the new subject for the purpose of calculating his percentage of attendance in the new subject.

6. The head of a recognised institution may condone a deficiency of not more than six days. All cases in which this privilege is exercised must be reported to the University.

7. All cases, where the deficiency exceeds six days should be reported to the Vice-Chancellor who may in very special circumstances condone a deficiency upto a period of twenty days in each case.

* The prescribed form is printed as appendix to these rules.

career in the school. A scholar returning to the school after absence of any duration shall resume his original admission number.

3. If a scholar presented for admission to a school has attended any other school, an authenticated copy of the scholar's register from his last and any former schools must be produced before his name can be entered on the rolls. Scholars coming from verracular schools shall be required to produce a leaving certificate.

4. A scholar who has not attended for a whole year or the greater part of a year may be admitted into the class immediately above the one he last read in, in which case the fact should be recorded in the scholar's register. In the same way a scholar, who has not attended school for two years or the greater part of two years, may be allowed to join a class two standards higher, and so on, but in no other case shall the scholar be admitted into a higher class than that for which he holds the scholar's register. The headmaster, is however, authorised to place him in a lower class than the one for which he holds the scholar's register. Scholars coming from verracular schools may be admitted to any class for which they are found fit.

5. A scholar leaving his school shall not be admitted into another school in the same town during the currency of the session, except with the permission of the Head of the Education Department of the State.

6. A scholar's transfer from a school in the jurisdiction of the University to another school in the jurisdiction of the University shall be permitted at any time during the year with the mutual consent of the headmasters of the schools concerned and the Director of Education and after payment of dues (if any) to the end of the current month if:—

- (1) the scholar's parent or guardian has moved from the town or station in which the school is situated, or
- (2) a qualified doctor certifies that a change of air is necessary for the scholar.

7. The Head of the Education Department is authorised to permit admission or transfer of a scholar or scholars, notwithstanding these rules, at any time during the currency of the school session on payment of fees,

{(1) This rule shall not interfere with any restriction laid down by the Education Department of the State regarding the admission of scholars to certain classes without their passing certain departmental examinations conducted by the Department.

(2) This rule shall not justify the admission of a student to class X unless he has completed a regular course of study in class IX in a recognised school,

if any, to the end of the current month; but the exceptional circumstances which render such transfer expedient must be communicated in writing to the headmaster of the school concerned. The number and date of the order of the Head of the Education Department should be stated on the scholar's register in each case.

8. A scholar shall not be allowed to migrate during the session from one school to another after his name has been sent up for an examination conducted by the University.

9. A scholar leaving his school at the end of the school session or who is permitted to leave his school during the currency of the session shall, on payment of all dues, receive an authenticated copy of the scholar's register up-to-date. A duplicate copy may be issued if the headmaster is satisfied that the original is lost but it shall always be so marked. If the scholar seeks admission from a school in the jurisdiction of the University into another school in the University jurisdiction, the scholar's register signed by the headmaster of the school shall be sufficient authority for his admission into the new school.

10. The headmaster of a school may punish a boy by expulsion with the sanction of the Head of the Education Department. If, in the opinion of the headmaster, the fault committed is of such a nature as to deserve severe punishment, he should report the circumstances to the Head of the Education Department stating for what period the boy should, in his opinion, be debarred from admission into any school and the Head of the Education Department may then pass an order fixing the period of rustication.

11. If the statement made by the parent or guardian of a scholar or by the scholar himself, if he is a major, at the time of his admission into a school, is found to contain any wilful misrepresentation of facts regarding the scholar's career, the headmaster of the school concerned shall report the fact to the Head of the Education Department, who may at his discretion punish the scholar by fine or rustication for a period not exceeding six months.

*12. When a scholar has been expelled or rusticated with the sanction of the Head of the Education Department, the fact shall be communicated

*Expulsion means that a boy will never be re-admitted to the institution from which he is expelled, but it does not preclude his admission at any time to another institution at the discretion of the Head of the Education Department. 'Rustication' means that a boy will not be admitted to any institution of the period of rustication.

by the Head of the Education Department to the Registrar of the University who shall issue a circular to all schools within the jurisdiction of the University notifying the rustication or expulsion. No student who has been rusticated shall be admitted into a recognised school during the period of his rustication.

B.—The following rules shall be applicable to students who migrate from an educational institution (school or college) from an area outside the jurisdiction of the University to an educational institution within the jurisdiction of the University:—

1. No scholar who is reading in any school outside the jurisdiction of the University preparing candidates for an examination which is not recognised by the University shall be admitted into the high section of the recognised schools within the jurisdiction of the University.

2. No scholar who is reading in any school outside the jurisdiction of the University preparing candidates for an examination recognised by the University as equivalent to its High School Examination shall be allowed to migrate to a school within the jurisdiction of the University unless—

- (a) a change of air for the improvement of the scholar's health has been advised by a qualified doctor to a place within the jurisdiction of the University, or
- (b) the scholar's parents or guardians are transferred to an area within the jurisdiction of the University.

3. If a scholar from a school outside the jurisdiction of the University preparing candidates for an examination recognised by the University as equivalent to its High School Examination is permitted under the rules to migrate to a school within the jurisdiction of the University, he shall produce his scholar's register or transfer certificate from his last school countersigned by the Inspector of Schools of the division from which he migrates.

4. No scholar from a school in an area outside the jurisdiction of the University shall be admitted into a school in any area within the jurisdiction of the University, if—

- (a) his conduct at the last school or college was bad, or
- (b) he was expelled, rusticated or disqualified from appearing at any public examination held in the area from which he wished to migrate.

5. In case a scholar has been expelled or rusticated or disqualified from appearing at any public examination for a fixed period, he may be

allowed admission in a school or college within the jurisdiction of the University on the expiry of such period; provided always that the written consent of the Inspector of Schools of the division from which the student wishes to migrate is first obtained and such other conditions with regard to the counting of the scholar's attendance at the last school towards his total attendance, etc., as are laid down by the said Inspector of Schools, are fulfilled.

All such cases of admission shall be brought to the notice of the University, through the Head of the Education Department.

6. Notwithstanding anything contained in these rules, the Vice-Chancellor of the University may sanction the admission of a scholar from an area outside the jurisdiction of the University. But in every such case the order of the Vice-Chancellor shall be obtained in writing and the number and date of such order shall be entered in the scholar's record for reference.

C.—Rules relating to the migration of students from an area in the jurisdiction of the University to an area outside the jurisdiction of the University.

1. A migration certificate may be granted by the Registrar when required by the student wishing to migrate to an area outside the jurisdiction of the University on payment of a fee of Rs. 5/-, provided that he has once appeared at any examination of the University.

2. A duplicate copy of the migration certificate, if required by a student when he has lost the original, will be issued to him by the Registrar for which a fee of Re. -/8/- shall be charged.

Rules regarding corrections in age entries made on the application forms of candidates for the High School Examination:—

Cases in which it is proved that a wrong entry was made in the school records or in the application form by a clerical error may be granted provided:

- (1) that the Head of the Education Department is satisfied after personal inquiry and inspection of the school records that the mistake is a genuine one and recommends that it be corrected in the same manner as the records in the Office of the Registrar of the University,
- (2) that no correction of any kind is made in the age entries in a candidate's certificate three months after the certificate has been delivered to him.

Rules relating to maximum periods of work of a teacher in institutions recognised by the University.

1. No teacher teaching high school classes shall be allowed to teach for more than 33 periods per week.

2. No teacher teaching intermediate as well as high school classes shall be allowed to teach for more than 30 periods per week, three periods of high school being reckoned as equivalent to two periods of the Intermediate.

NOTE—The length of a teaching period for high school classes shall be 40 minutes.

3. No teacher should teach more than two subjects in high school classes.

Rules relating to the minimum recurring grants for the institutions recognised by the University.

1. Minimum recurring grants for library in the high schools should be Rs. 300/- per annum.

2. Minimum recurring grants per annum for science subjects should be Rs. 200/- if the number of students in classes IX and X is 20; Rs. 400/- if the number of students exceeds 20 and is up to 50; Rs. 500/- up to 100; Rs. 600/- up to 200; and Rs. 800/- up to 300 students.

Rules relating to the attendance of students in classes IX, X of the institutions recognised by the University.

The attendance of classes IX and X should every month be transferred by all recognised institutions to a permanent register maintained in their office in the form given below which at the end of the session should be properly checked.

Serial No.	S.R. No.	Name.	Date of birth	Eleven columns from July to May	Total	Signature.

Rules for Paper-setters, Moderators and Examiners.**(a) Rules for Paper-setters.**

1. Questions should aim at testing the ability of a candidate (a) to understand a topic, (b) to apply his knowledge to solving practical problems and not merely at testing his ability to reproduce answers which have been given to him in notes or learnt from a book.
2. In question papers on languages, direct questions involving the work of memory rather than of intelligence and questions requiring explanations with reference to context should be discouraged.
3. In question papers on modern Indian languages, the medium of questions and answers required should be that particular language and not the English language. For instance, all questions in Urdu, Hindi should be in Urdu, Hindi respectively and candidates should be required to write their answers in the respective vernaculars in which they are being examined.
4. In languages papers, the question in essay-writing should definitely state the topics of essays and the kind of people for whom the answer is to be written. It should be stated if the essay is meant for the public or for literary people or is to be addressed to a definite person, such as fellow-students or parents.
5. Every part of every question shall be strictly comprised within the prescribed course of study.
6. Every part of every question shall be clear and definite in language as also in regard to the nature of the answers required of the candidates.
7. The question paper shall be fairly distributed over the whole course of study and not concentrated on any one or a few portions only.
8. At least twenty-five per cent more questions shall be set than what the candidates are required to answer.
9. The standard of the question paper as a whole shall not substantially vary from one year to the next. If the standard is desired to be altered, such change shall be spread over several years and not made suddenly in any one year; the greater the change, the longer being the period of such adjustment.

10. In languages the questions on text-books for explanation shall have several alternative passages.

11. In question papers in languages the paper-setter shall in a separate note give reference to the pages of the text-books from which extracts have been taken and the moderator shall check all such extracts and destroy the note.

12. In Classical and European languages, not more than fifty per cent and not less than twenty-five per cent of the total marks in the paper on the prescribed book shall be assigned to translation.

13. In Classical and Modern Indian and European Languages the medium of answering questions shall be deemed to be either English or the languages with which the question is concerned, at the option of the candidate, unless the medium is specifically mentioned in the question itself.

14. No question shall be put at any examination calling for a declaration of religious belief on the part of the candidate, and no answer given by any candidate shall, in allotting marks be objected to, on the ground of its giving expression to any particular form of religious belief.

15. The actual answering of questions should take half an hour less than the time allotted to the candidates for the paper. The remaining half hour should be allowed for reading the question paper carefully and for revising the answers.

16. In setting a question paper abbreviations of all kinds except those in special subjects should be avoided.

17. If the Moderation Board is entirely dissatisfied with the question paper set, it may either call upon the paper-setter to set a fresh paper or it may itself set a fresh paper. In the latter case the paper-setter will receive no remuneration for setting the paper.

(b) Rules for Moderators.

1. The Moderator shall see that the rules for paper setting are strictly followed, and shall make no alteration in the question paper except where it has violated the rules for paper-setting.

2. The Moderator shall return the question paper to the Registrar quite ready, for the Press, all corrections and alterations being clearly and legibly made.

conventional one where the intake and excretion are plotted from the same base line is that it allows one to focus on the most important feature of a balance study, namely the balance (cf. Fig 157A and B). It will be seen that both methods are equally good in this respect until the intake is changed; this results in the more conventional method in a discontinuity in the balance.

Where the data represent periods greater than one day, it is preferable to reduce the values to the average value per 24 hours in charting. If one is charting several measurements that have constant interrelationships, the scales should be chosen so that the units express these constant relationships. Thus, when metabolic data referring to calcium, phosphorus, and

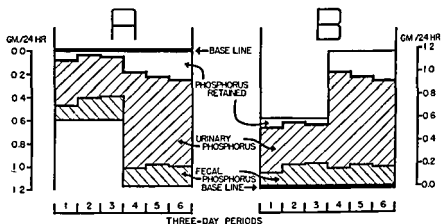


Fig 157 Two Methods of Charting the Same Metabolic Balance Data
(A) Method advocated, (B) conventional method where intake is plotted from same baseline as excretions

For discussion, see text [From Reifenstein, Albright, and Wells (1945)].

nitrogen are being charted, the units should be chosen so that one unit of the phosphorus scale equals 15 units of the nitrogen scale and two units of the calcium scale (N/P in muscle protoplasm equals about 14.7/1,* Ca/P in bone equals 2.23/1,† for example, see Fig. 7, p. 19). One objection to this method of charting is that the calcium scale is very small; when the calcium data are important an additional chart with a magnified calcium scale may be desirable (see Fig 103, p. 203). Relationships between potassium and nitrogen, and sulfur and nitrogen are treated similarly (for ratios see Table 8; for example, see Fig 156).

The authors wish to stress the importance of including base lines, aver-

*[Benedict (1915)].

†[Shohl (1939a)].

age normal levels and zero points for all data that are charted. It is obviously misleading to chart an alteration in the level of a substance unless the column representing the level begins at zero.

V. METHODS OF ANALYSIS AND STUDY

The methods of analysis used in the laboratory are, in general, standard techniques. Urine and stool specimens are analyzed for calcium by the method of Fiske and Logan (1931); phosphorus by the method of Fiske and SubbaRow (1925); nitrogen by the Kjeldahl method of Folin (1934); and potassium by the method of Fiske and Litarazek (1934). The sulfur content of the urine is determined by the method of Fiske (1921); the creatine and creatinine content of the urine by the method of Folin (1914) [see also Greenwald and Gross (1924)]. The 17-ketosteroid excretion in the urine is determined by the modification of the Zimmermann reaction (1935) introduced by Callow, Callow, and Emmens (1938), and subsequently further modified by Fraser, Forbes, Albright, Sulkowitch, and Reifenstein (1941). The follicle-stimulating hormone (FSH) excretion in the urine is determined by the method of Klinefelter, Albright, and Griswold (1943); the "11-oxysteroids" (corticosteroids) in the urine are determined by the method of Talbot, Saltzman, Wixom, and Wolfe (1945). The corticosteroid biological activity is assayed by a modification of the Dobriner, Lieberman, and Eggleston (1945) adaptation to mice [see also Eggleston, Dobriner, and Rhoads (1944)] of the Reinecke and Kendall (1942) test on rats.

The following methods have been employed for serum: calcium, Fiske and Logan (1931); phosphorus, Fiske and SubbaRow (1925); alkaline phosphatase, Bodansky (1933); potassium, Fiske and Litarazek (1934); sugar, Folin and Svedberg (1930); chloride, Wilson and Ball (1928); sodium, Butler and Tuthill (1931); protein, Lowry and Hunter (1938), and carbon dioxide, Van Slyke and Neill (1924). The basal metabolic rate is determined by the closed circuit method of Benedict as modified by Roth (1922).

The methods employed in the accumulation, interpretation, and presentation of data pertaining to metabolic balances, notably those of calcium, phosphorus, and nitrogen are discussed in detail elsewhere [Reifenstein, Albright, and Wells (1945)]. A synopsis of other diagnostic procedures can be found in a previous communication [Reifenstein (1944)].

BIBLIOGRAPHY

- Abels, J C ; and Dobriner, K Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of Seventh Meeting, June 9-10, 1944, p 122, distributed by Josiah Macy, Jr Foundation, New York.
- Adams, M , Boothby, W M , and Snell, A M Metabolic Studies in Osteoporosis, *Am J Physiol* 114 383-398 (Jan) 1936
- Albright, F Renal Osteitis Fibrosa Cystica Report of a Case with Discussion of Metabolic Aspects, *Trans Assoc Am Phys* 51: 199-212, 1936
- Albright, F Note on the Management of Hypoparathyroidism with Dihydrotachysterol, *J A M A* 112 2592-2593 (June 24) 1939
- Albright, F Cushing's Syndrome Its Pathological Physiology, Its Relationship to the Adreno-Genital Syndrome and Its Connection with the Problem of the Reaction of the Body to Injurious Agents ("Alarm Reaction" of Selye), *Harvey Lecture Series* 38 123-186, 1942-43
- Albright, F The Effect of Hormones on Osteogenesis in Man, p 293-353, in *Recent Progress in Hormone Research*, Laurentian Hormone Conference of 1945, Academic Press, Inc , New York, 1947a
- Albright, F Polyostotic Fibrous Dysplasia A Defense of the Entity, *J. Clin. Endocrinol* 7 307-324 (May) 1947b
- Albright, F Osteoporosis, *Ann Int Med* 27 861-882 (Dec) 1947c.
- Albright, F see Aub
- Albright, F see Bauer
- Albright, F see De La Balze
- Albright, F see Drake
- Albright, F see Forbes
- Albright, F see Fraser
- Albright, F see Ingalls
- Albright, F see Klinefelter
- Albright, F see Reifenstein
- Albright, F see Sutphin
- Albright, F , Aub, J C , and Bauer, W Hyperparathyroidism A Common and Polymorphic Condition as Illustrated by Seventeen Proved Cases from One Clinic, *J A M A* 102 1276-1287 (April 21) 1934
- Albright, F , Baird, P C , Cope, O , and Bloomberg, E Studies on the Physiology of the Parathyroid Glands IV Renal Complications of *Hyperparathyroidism*, *Am J Med Sci* 187 49-65 (Jan) 1934
- Albright, F , Bauer, W , Clafin, D , and Cockrill, J R Studies in Parathyroid Physiology III The Effect of Phosphate Ingestion in Clinical Hyperparathyroidism, *J Clin Invest* 11 411-435 (March) 1932.
- Albright, F , Bauer, W , Cockrill, J R , and Ellsworth, R Studies on the Physiology of the Parathyroid Glands II The Relation of the Serum Calcium to the Serum Phosphorus at Different Levels of Parathyroid Activity, *J Clin Invest* 9: 659-677 (Feb) 1931
- Albright, F , Bauer, W , Ropes, M ; and Aub, J C Studies of Calcium and Phosphorus Metabolism IV The Effects of the Parathyroid Hormone, *J Clin Invest* 7 139-181 (April) 1929
- Albright, F , and Bloomberg, E Hyperparathyroidism and Renal Disease with a Note as to the Formation of Calcium Casts in This Disease, *Trans Assoc Am. Genito Urinary Surg*, p 193-202, 1934.

- Albright, F., Bloomberg, E., Castleman, B., and Churchill, E. D. Hyperparathyroidism due to Diffuse Hyperplasia of All Parathyroid Glands Rather than Adenoma of One. Clinical Studies on Three Such Cases, *Arch. Int. Med.* **54** 315-329 (Sept.) 1934
- Albright, F., Bloomberg, E.; Drake, T. G., and Sulkowitch, H. W. A Comparison of the Effects of A T 10 (Dihydrotachysterol) and Vitamin D on Calcium and Phosphorus Metabolism in Hypoparathyroidism, *J. Clin. Invest.* **17** 317-329 (May) 1938.
- Albright, F., Bloomberg, E.; and Smith, P. H. Post-Menopausal Osteoporosis, *Trans. Assoc. Am. Phy.* **55** 298-303, 1940
- Albright, F.; Burnett, C. H., Cope, O., and Parson, W.: Acute Atrophy of Bone (Osteoporosis) Simulating Hyperparathyroidism, *J. Clin. Endocrinol.* **1** 711-716 (Sept.) 1941.
- Albright, F.; Burnett, C. H., Parson, W., Reifenstein, E. C., Jr., and Roos, A.: Osteomalacia and Late Rickets. The Various Etiologies Met in the United States with Emphasis on That Resulting from a Specific Form of Renal Acidosis, the Therapeutic Indications for Each Etiological Sub-Group, and the Relationship Between Osteomalacia and Milkman's Syndrome, *Medicine* **25** 399-479 (Dec.) 1946
- Albright, F.; Burnett, C. H.; Smith, P. H.; and Parson, W.: Pseudo-Hypoparathyroidism, An Example of 'Sebright-Bantam Syndrome' Report of Three Cases, *Endocrinol.* **30** 922-932 (June) 1942
- Albright, F., Butler, A. M., and Bloomberg, E. Rickets Resistant to Vitamin D Therapy, *Am. J. Dis. Child.* **54** 529-547 (Sept.) 1937.
- Albright, F., Butler, A. M., Hampton, A. O.; and Smith, P. H. Syndrome Characterized by Osteitis Fibrosa Disseminata, Areas of Pigmentation and Endocrine Dysfunction, with Precocious Puberty in Females, Report of Five Cases, *New Eng. J. Med.*, **216** 727-746 (April 29) 1937
- Albright, F., Consolazio, W. V.; Coombs, F. S., Sulkowitch, H. W.; and Talbott, J. H. Metabolic Studies and Therapy in a Case of Nephrocalcinosis with Rickets and Dwarfism, *Bull. Johns Hopkins Hosp.* **66** 7-33 (Jan.) 1940
- Albright, F., Drake, T. G., and Sulkowitch, H. W. Renal Osteitis Fibrosa Cystica, Report of a Case with Discussion of Metabolic Aspects, *Bull. Johns Hopkins Hosp.* **60** 377-399 (June) 1937
- Albright, F., and Ellsworth, R. Studies on the Physiology of the Parathyroid Glands. I. Calcium and Phosphorus Studies on a Case of Idiopathic Hypoparathyroidism, *J. Clin. Invest.* **7** 183-201 (June 20) 1929
- ✓ Albright, F.; Parson, W., and Bloomberg, E. Cushing's Syndrome Interpreted as Hyperadrenocorticism leading to Hyperglucocortecogenesis, Results of Treatment with Testosterone Propionate, *J. Clin. Endocrinol.* **1** 375-384 (May) 1941
- Albright, F., Reifenstein, E. C., Jr., and Forbes, A. P. Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of the Sixth Meeting, February 11-12, 1944, p. 148, Transactions of the Twelfth Meeting, February 4-5, 1946, p. 126, distributed by Josiah Macy, Jr. Foundation, New York.
- Albright, F., Reifenstein, E. C., Jr., and Forbes, A. P. Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of the Eighth Meeting, October 13-14, 1944, p. 163, distributed by Josiah Macy, Jr. Foundation, New York
- Albright, F., Scoville, W. B.; and Sulkowitch, H. W. Syndrome Characterized by Osteitis Fibrosa Disseminata, Areas of Pigmentation, and Gonadal Dysfunction;

BIBLIOGRAPHY

- Abels, J C , and Dobriner, K Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of Seventh Meeting, June 9-10, 1944, p 122, distributed by Josiah Macy, Jr Foundation, New York.
- Adams, M , Boothby, W M , and Snell, A M Metabolic Studies in Osteoporosis, *Am J Physiol* 114 383-398 (Jan.) 1936
- Albright, F Renal Osteitis Fibrosa Cystica Report of a Case with Discussion of Metabolic Aspects, *Trans Assoc Am Phys* 51: 199-212, 1936.
- Albright, F Note on the Management of Hypoparathyroidism with Dihydratysterol, *J A M A* 112 2592-2593 (June 24) 1939
- Albright, F Cushing's Syndrome Its Pathological Physiology; Its Relationship to the Adreno-Genital Syndrome and Its Connection with the Problem of the Reaction of the Body to Injurious Agents ("Alarm Reaction" of Selye), *Harvey Lecture Series* 38 123-186, 1942-43
- Albright, F The Effect of Hormones on Osteogenesis in Man, p 293-353, in *Recent Progress in Hormone Research, Laurentian Hormone Conference of 1945*, Academic Press, Inc , New York, 1947a
- Albright, F Polyostotic Fibrous Dysplasia A Defense of the Entity, *J. Clin. Endocrinol* 7 307-324 (May) 1947b
- Albright, F Osteoporosis, *Ann Int. Med* 27 861-882 (Dec.) 1947c.
- Albright, F see Aub
- Albright, F see Bauer
- Albright, F see De La Balze
- Albright, F see Drake
- Albright, F see Forbes
- Albright, F see Fraser
- Albright, F see Ingalls
- Albright, F see Klinefelter.
- Albright, F see Reifenstein
- Albright, F . see Sutphin
- Albright, F , Aub, J C , and Bauer, W Hyperparathyroidism A Common and Polymorphic Condition as Illustrated by Seventeen Proved Cases from One Clinic, *J A M A* 102 1276-1287 (April 21) 1934
- Albright, F , Baird, P C , Cope, O , and Bloomberg, E Studies on the Physiology of the Parathyroid Glands IV Renal Complications of Hyperparathyroidism, *Am J Med Sci* 187 49-65 (Jan) 1934
- Albright, F , Bauer, W , Clafin, D , and Cockrill, J R Studies in Parathyroid Physiology III The Effect of Phosphate Ingestion in Clinical Hyperparathyroidism, *J Clin Invest* 11 411-435 (March) 1932
- Albright, F , Bauer, W ; Cockrill, J. R , and Ellsworth, R Studies on the Physiology of the Parathyroid Glands II The Relation of the Serum Calcium to the Serum Phosphorus at Different Levels of Parathyroid Activity, *J. Clin Invest* 9 659-677 (Feb) 1931
- Albright, F ; Bauer, W ; Ropes, M., and Aub, J C Studies of Calcium and Phosphorus Metabolism IV The Effects of the Parathyroid Hormone, *J Clin. Invest* 7: 139-181 (April) 1929
- Albright, F ; and Bloomberg, E Hyperparathyroidism and Renal Disease with a Note as to the Formation of Calcium Casts in This Disease, *Trans Assoc. Am. Genito-Urinary Surg* , p. 195-202, 1934.

- Aub, J. C.; Fairhall, L. T.; Minot, A. S.; and Reznikoff, P. Lead Poisoning, Medicine Monographs, Volume VII, Williams and Wilkins Company, Baltimore, 1925.
- Bailey, F. R. see Jacox.
- Baines, G. H., Barclay, J. A., and Cooke, W. T.. Nephrocalcinosis Associated with Hyperchloremia and Low Plasma-Bicarbonate, *Quart. J. Med.* 14: 113-123 (April) 1945.
- Baird, P. C. see Albright.
- Bakwin, H. Tetany in Newborn Infants; Relation to Physiologic Hypoparathyroidism, *J. Ped.* 14: 1-10 (Jan.) 1939.
- Ball, E. G. see Wilson.
- Barclay, J. A. see Baines.
- Barney, J. D., and Sulkowitch, H. W.. Progress in the Management of Urinary Calculi, *J. Urol.* 57: 746-762 (June) 1937.
- Barr, D. P. see Deitrick.
- Barr, D. P., and Bulger, H. A.: The Clinical Syndrome of Hyperparathyroidism, *Am. J. Med. Sci.* 179: 449-476 (April) 1930.
- Barr, D. P.; MacBryde, C. M., and Sanders, T. E.: Tetany with Increased Intracranial Pressure and Papilledema—Results from Treatment with Dihydroxycholesterol, *Trans. Assoc. Am. Phys.* 63: 227-232, 1938.
- Barron, E. S. G. see McLean.
- Baudouin, A. see Claude.
- Bauer, W. Hyperparathyroidism A Distinct Disease Entity, *J. Bone and Joint Surg.* 16: 135-141 (Jan.) 1933.
- Bauer, W. see Albright.
- Bauer, W. see Aub.
- Bauer, W. see Drake.
- Bauer, W. see Waime.
- Bauer, W., Albright, F., and Aub, J. C. A Case of Osteitis Fibrosa Cystica (Osteomalacia?) with Evidence of Hyperactivity of the Parathyroid Bodies Metabolic Study II, *J. Clin. Invest.* 8: 229-248 (Feb.) 1930.
- Bauer, W., and Aub, J. C. Studies of Calcium and Phosphorus Metabolism XVI The Influence of the Pituitary Gland, *J. Clin. Invest.* 20: 295-301 (May) 1941.
- Bauer, W., and Marble, A. Studies on the Mode of Action of Irradiated Ergosterol II Its Effects on the Calcium and Phosphorus Metabolism of Individuals with Calcium Deficiency Diseases, *J. Clin. Invest.* 11: 21-35 (Jan.) 1932.
- Bauer, W.; Marble, A., and Clafin, D. Studies on the Mode of Action of Irradiated Ergosterol I. Its Effect on the Calcium, Phosphorus, and Nitrogen Metabolism of Normal Individuals, *J. Clin. Invest.* 11: 1-19 (Jan.) 1932.
- Beck, A. Dritter Sitzungstag-Aussprache zu 29-31, *Arch. f. klin. Chir.* 152: 123-126, (April 13) 1928.
- Beck, R. D. see Kaufman.
- Beckman, W. W. see Emerson.
- Becks, H., Simpson, M. E.; Li, C. H.; and Evans, H. M. Effects of Adrenocorticotrophic Hormone (ACTH) on the Osseous System in Normal Rats, *Endocrinol.* 34: 305-310 (May) 1944.
- Becks, H., Simpson, M. E.; Marx, W., Li, C. H.; and Evans, H. M. Antagonism of Adrenocorticotrophic Hormone (ACTH) to the Action of Growth Hormone on the Osseous System of Hypophysectomized Rats, *Endocrinol.* 34: 311-316 (May) 1944.
- Bell, J. C. see Venning.

- Further Observations Including Report of Two More Cases, *Endocrinol.* **22**: 411-421 (April) 1938
- Albright, F., Smith, P. H., and Fraser, R. W. A Syndrome Characterized by Primary Ovarian Insufficiency and Decreased Stature Report of 11 Cases With a Digression on Hormonal Control of Axillary and Pubic Hair, *Am. J. Med. Sci.* **204**: 625-648 (Nov.) 1942
- ✓ Albright, F., Smith, P. H., and Richardson, A. M. Post-Menopausal Osteoporosis; Its Clinical Features, *J. A. M. A.* **116**: 2465-2474 (May 31) 1941.
- Albright, F., and Stewart, J. D. Hypovitaminosis of All Fat-Soluble Vitamins due to Steatorrhea, Report of Case, *New Eng. J. Med.* **223**: 239-241 (Aug. 15) 1940
- Albright, F., and Strock, M. S. The Association of Acalcification of Dentine with Hypoparathyroidism in Rats and the Cure of Same with Parathormone, with Some Correlated Observations in Man, *J. Clin. Invest.* **12**: 974 (Sept.) 1933
- Albright, F., and Sulkowitch, H. W. The Effect of Vitamin D on Calcium and Phosphorus Metabolism, Studies on Four Patients *J. Clin. Invest.* **17**: 305-315 (May) 1938
- Albright, F., Sulkowitch, H. W., and Bloomberg, E. Further Experience in the Diagnosis of Hyperparathyroidism, Including a Discussion of Cases with a Minimal Degree of Hyperparathyroidism, *Am. J. Med. Sci.* **193**: 800-812 (June) 1937
- Albright, F., Sulkowitch, H. W., and Bloomberg, E. Hyperparathyroidism due to Idiopathic Hypertrophy (Hyperplasia?) of Parathyroid Tissue Follow-Up Report of Six Cases, *Arch. Int. Med.* **62**: 199-215 (Aug.) 1938.
- Albright, F., Sulkowitch, H. W., and Bloomberg, E. A Comparison of the Effects of Vitamin D, Dihydrocholesterol (A.T.10), and Parathyroid Extract on the Disordered Metabolism of Rickets, *J. Clin. Invest.* **18**: 165-169 (Jan.) 1939.
- Alexander, H. B.; Pemberton, J. de J., Kepler, E. J., and Broders, A. C. Functional Parathyroid Tumors and Hyperparathyroidism Clinical and Pathologic Considerations, *Am. J. Surg.* **65**: 157-188 (Aug.) 1944
- Anderson, E.; Haymaker, W., and Joseph, M. Hormone and Electrolyte Studies of Patients with Hyperadrenocortical Syndrome (Cushing's Syndrome), *Endocrinol.* **23**: 398-402 (Oct.) 1938
- Anspach, W. E., and Clifton, W. M. Hyperparathyroidism in Children, *Am. J. Dis. Child.* **58**: 540-557 (Sept.) 1939
- Armstrong, W. D., Knowlton, M., and Gouze, M. Influence of Estradiol and Testosterone Propionates on Skeletal Atrophy from Disuse and on Normal Bones of Mature Rats, *Endocrinol.* **36**: 313-322 (May) 1945
- Ashburn, L. I. see Gentile
- Aub, J. C. see Albright
- Aub, J. C. see Bauer
- Aub, J. C. see Farquharson.
- Aub, J. C. see Salter
- Aub, J. C., Albright, F., Bauer, W., and Rossmcisl, E.. Studies on Calcium and Phosphorus Metabolism: VI In Hypoparathyroidism and Chronic Steatorrhea with Tetany, with Special Consideration of the Therapeutic Effect of Thyroid, *J. Clin. Invest.* **11**: 211-234 (Jan.) 1932
- Aub, J. C.; Bauer, W., Heath, C., and Ropes, M.: Studies of Calcium and Phosphorus Metabolism III The Effects of the Thyroid Hormone and Thyroid Disease, *J. Clin. Invest.* **7**: 97-137 (April) 1929.

- Bulger, H. A.: see Barr.
- Burnett, C. H.: see Albright.
- Bussabarger, R. A.; Freeman, S.; and Ivy, A. C.: Experimental Production of Severe Homogeneous Osteoporosis by Gastrectomy in Puppies, *Am. J. Physiol.* 121: 137-148 (Jan.) 1938.
- Butler, A. M.: see Albright
- Butler, A. M.: see Talbot
- Butler, A. M.; and Tuthill, E.: An Application of the Uranyl Zinc Acetate Method for Determination of Sodium in Biological Material, *J. Biol. Chem.* 95: 171-180 (Sept.) 1931.
- Butler, A. M.; Wilson, J. L., and Farber, S.: Dehydration and Acidosis with Calcification at Renal Tubules, *J. Pediat.* 8: 489-499 (April) 1936
- Callow, N. H., Callow, R. K.; and Emmens, C. W.: Colorimetric Determination of Substances Containing the Grouping $-CH_3CO-$ in Urine Extracts as Indication of Androgen Content, *Biochem. J.* 32: 1312-1331 (Aug.) 1938.
- Callow, R. D.: see Callow, N. H.
- Camp, J. D.: see Siglin
- Camp, J. D.; and McCullough, J. A. L.: Pseudofractures in Diseases Affecting the Skeletal System, *Radiology* 56: 651-663 (June) 1941
- Campbell, E. H.: see Gorham.
- Cantarow, A.: see Rakoff.
- Carroll, E.: see Reifstein.
- Castleman, B.: Discussion of Case of Parathyroid Adenoma in weekly Clinico-pathological Exercise, Case Records of the Massachusetts General Hospital, *New Eng. J. Med.* 232: 255-259 (March 1) 1945
- Castleman, B.: see Albright
- Castleman, B.: see Drake
- Castleman, B., and Hertz, S.: Pituitary Fibrosis with Myxedema, *Arch. Path.* 27: 69-79 (Jan.) 1939
- Castleman, B., and Mallory, T. B.: The Pathology of the Parathyroid Gland in Hyperparathyroidism, Study of Twenty-Five Cases, *Am. J. Path.* 11: 1-72 (Jan.) 1935
- Chen, K. C.: see Hannon
- Chen, K. C.: see Liu
- Chou, S. K.: see Hannon
- Chou, S. K.: see Liu
- Chu, H. I.: see Hannon
- Chu, H. I.: see Liu
- Churchill, E. D.: see Albright
- Churchill, E. D., and Cope, O.: The Surgical Treatment of Hyperparathyroidism, Based on Thirty Cases Confirmed by Operation, *Ann. Surg.* 104: 9-35 (July) 1936
- Chvostek, F.: Beitrage zur Tetanie, *Wein. med. Presse*, 17: 1201, 1226, 1253; 1314, 1876. *Idem. ibid.*, 19: 821, 836, 921, 989, 1043, 1065, 1345, 1878. *Idem. ibid.*, 20: 1201; 1233, 1278, 1301, 1879. *Idem.* Ueber das Verhalten der elektrischen und mechanischen Erregbarkeit bei der Tetanie, *Feldarzt, Wein.*, p. 89, 1877. *Idem.* Ueber das Verhalten der sensiblen Nerven, des Hornnerven und des Hautleitungswiderstandes bei Tetanie, *Ztschr. f. klin. Med.*, 19: 489-538, 1891. Also, Frankl-Hochwart, v.: Die Tetanie, II. Aufl. Wein. Holder, 1907
- Claflin, D.: see Albright
- Claflin, D.: see Bauer

- Benedict, F. G. : A Study of Prolonged Fasting, Carnegie Inst., Washington, Publ. No. 203: 1-416, 1915
- Bernheim, A. R. : see Shorr
- Best, C. H. and Taylor, N. B. : The Physiological Basis of Medical Practice, Williams and Wilkins Co., Baltimore, p. 1141, fig. 281, 1940.
- Beumer, H., and Wepler, W. : Über die Cystinkrankheit der Ersten Lebenszeit, Klin. Woch. 16: 8-10, 1937.
- Bigham, R. S., Jr. : see Howard.
- Black, B. M., and Sprague, R. G. : Hyperparathyroidism due to Diffuse Primary Hypertrophy and Hyperplasia of the Parathyroid Glands. Report of Case, Proc. Staff Meet. Mayo Clin. 22: 73-80 (Feb. 19) 1947.
- Bloomfan, K. D. : see Gamble
- Bloom, W. : see McLean.
- Bloomberg, E. : see Albright
- Bloomberg, E. : see Reifenstein
- Blumgart, H. L. : see Gargill
- Bodansky, A. : Phosphatase Studies, Determination of Serum Phosphatase. Factors Influencing Accuracy of Determination, J. Biol. Chem. 101: 93-104 (June) 1933
- Bodansky, A., and Jaffe, H. L. : Phosphatase Studies III. Serum Phosphatase in Diseases of the Bone Interpretation and Significance, Arch. Int. Med. 54: 88-110 (July) 1934.
- Bogert, L. J., and Hastings, A. B. : The Calcium Salts of Bone, J. Biol. Chem. 94: 473-481 (Dec.) 1931
- Boothby, W. M. : see Adams.
- Bower, J. O., and Mengle, H. A. K. : The Additive Effect of Calcium and Digitalis A Warning, with a Report of Two Deaths, J. A. M. A. 106: 1151-1153 (April 4) 1936.
- Boyd, J. D., and Stearns, G. : Late Rickets Resembling Fanconi Syndrome, Am. J. Dis. Child. 61: 1012-1022 (May) 1941.
- Brady, W. J. : A Chart of the Average Time of Development, Eruption and Absorption of the Teeth, published by William J. Brady, D. D. S., Kansas City, Missouri, 1924
- Broders, A. C. : see Alexander.
- Browman, A. A. : Factors Affecting the Solubility of Certain Calcium Salts of Biological Significance, Thesis, Univ. of Chicago, 1935.
- Brown, C. L. : see Learner
- Brown, M., and Imrie, C. G. : The Influence of the Parathyroid on the Metabolism of Creatine and Phosphoric Acid; Phosphate Excretion after Injections of Creatine and Parathormone, J. Phys. 75: 366-373 (July) 1932
- Brown, M. R.; Currens, J. H., and Marchand, J. F. : Muscular Paralysis and Electrocardiographic Abnormalities Resulting from Potassium Loss in Chronic Nephritis, J. A. M. A. 124: 545-549 (Feb. 26) 1944
- Browne, J. S. L. : The Response of the Adrenal Cortex to Stress, Laurentian Hormone Conference 1944, in press, September 20, 1944
- Browne, J. S. L. : see Weil.
- Browne, J. S. L., and Vineberg, A. M. : The Inter-Dependence of Gastric Secretion and CO₂ Content of the Blood, J. Physiol. 75: 345-365 (July) 1932
- Bruch, H. : see McCune.
- Bryant, D. F. : see Forbes.

- Bulger, H. A. : see Barr.
- Burnett, C. H. : see Albright.
- Bussabarger, R. A.; Freeman, S.; and Ivy, A. C.: Experimental Production of Severe Homogeneous Osteoporosis by Gastrectomy in Puppies, *Am J. Physiol* **121**: 137-148 (Jan) 1938.
- Butler, A. M. : see Albright
- Butler, A. M. : see Talbot.
- Butler, A. M.; and Tutbill, E. : An Application of the Uranyl Zinc Acetate Method for Determination of Sodium in Biological Material, *J Biol. Chem* **93**: 171-180 (Sept.) 1931.
- Butler, A. M.; Wilson, J. L., and Farber, S.: Dehydration and Acidosis with Calcification at Renal Tubules, *J Pediat* **8**: 489-499 (April) 1936
- Callow, N. H., Callow, R. K.; and Emmens, C. W.: Colorimetric Determination of Substances Containing the Grouping $-\text{CH}_2\text{CO}-$ in Urine Extracts as Indication of Androgen Content, *Biochem. J* **32** 1312-1331 (Aug.) 1938.
- Callow, R. D. : see Callow, N. H.
- Camp, J. D. : see Siglin.
- Camp, J. D.; and McCullough, J. A. L. Pseudofractures in Diseases Affecting the Skeletal System, *Radiology* **36** 651-663 (June) 1941
- Campbell, E. H. : see Gorham.
- Cantarow, A. : see Rakoff.
- Carroll, E. : see Reifenstein.
- Castleman, B. : Discussion of Case of Parathyroid Adenoma in weekly Clinicopathological Exercise, Case Records of the Massachusetts General Hospital, *New Eng J Med* **232** 255-259 (March 1) 1945
- Castleman, B. : see Albright
- Castleman, B. : see Drake
- Castleman, B.; and Hertz, S.: Pituitary Fibrosis with Myxedema, *Arch. Path.* **27**: 69-79 (Jan) 1939
- Castleman, B., and Mallory, T. B. : The Pathology of the Parathyroid Gland in Hyperparathyroidism, Study of Twenty-Five Cases, *Am J. Path* **11** 1-72 (Jan) 1935
- Chen, K. C. : see Hannon
- Chen, K. C. : see Liu
- Chou, S. K. : see Hannon
- Chou, S. K. : see Liu
- Chu, H. I. : see Hannon
- Chu, H. I. : see Liu
- Churchill, E. D. : see Albright
- Churchill, E. D., and Cope, O. : The Surgical Treatment of Hyperparathyroidism, Based on Thirty Cases Confirmed by Operation, *Ann Surg* **104** 9-35 (July) 1936
- Chvostek, F. : Beitrage zur Tetanie, *Wein med Presse*, **17** 1201, 1226, 1253, 1314, 1876. *Idem ibid.*, **19** 821, 856, 921, 989, 1043, 1065, 1345; 1878. *Idem ibid.*, **20** 1201, 1233, 1278, 1301, 1879. *Idem* Ueber das Verhalten der elektrischen und mechanischen Erregbarkeit bei der Tetanie, *Feldarzt, Wein*, p. 89, 1877. *Idem* Ueber das Verhalten der sensiblen Nerven, des Hörnerven und des Hautleitungswiderstandes bei Tetanie, *Ztschr. f. klin. Med.*, **19**: 489-538, 1891. Also, Frankl Hochwart, v. : Die Tetanie, II Aufl Wein Holder, 1907
- Claffin, D. : see Albright
- Claffin, D. : see Bauer

Clark, P J see Huggins

Clarke, H T . see McCune

Claude, H , and Baudouin, A . Etude Histologique des Glandes à Secretion Interne dans un Cas d'Acromégalie, *Compt rend. Soc. de biol.*, 71: 75-78, 1911.

Clifton, W M . see Anspach.

Cobb, S see Talbott

Cockrill, J. R see Albright.

Cogan, D G Unpublished Data, 1947.

Cohen, M. E see Talbott

Collip, J B The Extraction of a Parathyroid Hormone Which Will Prevent or Control Parathyroid Tetany and Which Regulates the Level of Blood Calcium, *J Biol Chem* 63 395-438 (March) 1925

Collip, J. B The Production of Some of the Phenomena Peculiar to Parathyroid Overdosage in Dogs by Means of Certain Inorganic Salts, *Am J. Physiol.* 76: 472-482 (April) 1926

Collip, J B . see Thomson.

Collip, J B . see Neufeld.

Collip, J. B ; Pugsley, L I , Selye, H , and Thomson, D L . Observations Concerning the Mechanism of Parathyroid Hormone Action, *Brit. J Exper. Path.* 15: 335-336 (Dec) 1934.

Consolazio, W V see Albright.

Consolazio, W V see Talbott

Cooke, R T see Smith.

Cooke, W T see Baines

Coombs, F. S see Albright

Coombs, F S . see Talbott

Cope, O Surgery of Hyperparathyroidism: The Occurrence of Parathyroids in the Anterior Mediastinum and the Division of the Operation into Two Stages, *Ann Surg* 114: 706-733 (Oct) 1941.

Cope, O . see Albright

Cope, O . see Churchill

Cox, L D see Forbes

Currens, J H see Brown

Cushing, H , and Davidoff, L M The Pathological Findings in Four Autopsied Cases of Acromegaly with a Discussion of Their Significance, *Monograph of Rockefeller Inst Med Res* , No 22, 1927a

Cushing, H , and Davidoff, L M Studies in Acromegaly IV. The Basal Metabolism, *Arch Int Med* 39 673-697 (May 15) 1927b

Cuthbertson, D P The Disturbance of Metabolism Produced by Bony and Non-Bony Injury, with Notes on Certain Abnormal Conditions of Bone, *Biochem J* 24 1244-1263, 1930

Cutler, M , and Owen, S E Irradiation of the Parathyroids in Generalized Osteitis Fibrosis Cystica, *S G and O* 59. 81-86 (July) 1934

Davidoff, L M. Studies in Acromegaly. III The Anamnesis and Symptomatology in One Hundred Cases, *Endocrinol* 10. 461-483 (Sept -Oct.) 1926.

Davidoff, L M. see Cushing.

Dawson, J. W., and Struthers, J. W : Generalized Osteitis Fibrosa, with Parathyroid Tumor and Metastatic Calcification, Including a Critical Discussion of Pathological Process Underlying Osseous Dystrophies, *Edinburgh Med. J.* 30: 421-564 (Oct) 1923

- de Boissezon, P see Pierre
- Detrick, J. E., Whedon, G. D., Shorr, E., and Barr, D. P. Effects of Bed Rest and Immobilization Upon Various Physiological and Chemical Functions of Normal Men, Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of the Ninth Meeting, February 2-3, 1945, p. 62-81, distributed by Josiah Macy, Jr. Foundation, New York.
- Detrick, J. E., Whedon, G. D.; and Shorr, E. The Effects of Bed Rest and Immobilization upon Various Chemical and Physiological Functions of Normal Men Their Modification by the Use of the Oscillating Bed, Conference on Metabolic Aspects of Convalescence, Transactions of the Twelfth Meeting, February 4-5, 1946, p. 44-61, distributed by Josiah Macy, Jr. Foundation, New York.
- De La Balze, F. A., Reifstein, E. C., Jr., and Albright, F. Differential Blood Counts in Certain Adrenal Cortical Disorders (Cushing's Syndrome, Addison's Disease and Panhypopituitarism), *J. Clin. Endocrinol.* 6: 312-319 (April) 1946.
- Dempsey, E. F. see Forbes
- Dent, C. E. Detection of Amino Acids in Urine and Other Fluids, *Lancet* 2: 637-639 (Nov. 2) 1946.
- Dent, C. E. Partition Chromatography on Paper A Qualitative Method for Identifying Amino Acids in Urine, and Its Application to the Fanconi Syndrome, Conference on the Metabolic Aspects of Convalescence, Transactions of the 14th Meeting, Nov. 12-13, 1946, p. 126-157, distributed by Josiah Macy, Jr. Foundation, New York.
- Dobriner, K. see Abels
- Dobriner, K. see Eggleston
- Dobriner, K., Lieberman, S., and Eggleston, N. M. Conference on Metabolic Aspects of Convalescence, Including Bone and Wound Healing, Transactions of the Tenth Meeting, June 15-16, 1945, p. 125-220, distributed by Josiah Macy, Jr. Foundation, New York.
- Donaldson, E. C. see Forbes
- Donaldson, E. C. see Reifstein
- Donaldson, G. A. see Ingalls
- Donhauser, J. L. see Gorham
- Dougherty, T. F., and White, A. Influence of Hormones on Lymphoid Tissue Structure and Function The Role of the Pituitary Adrenotrophic Hormone in the Regulation of the Lymphocytes and Other Cellular Elements of the Blood, *Endocrinol.* 35: 1-14 (July) 1944.
- Downs, R. S., and Scott, V. Hyperparathyroidism with Adenoma Causing Renal Failure and Secondary Hyperparathyroidism Report of a Case, *Arch. Int. Med.* 67: 658-665 (March) 1941.
- Dral
- Dral pathic
Ann
- Int. Med.* 12: 1751-1765 (May) 1939
- Drake, T. G., Albright, F., and Castleman, B. Parathyroid Hyperplasia in Rabbits Produced by Parenteral Phosphate Administration, *J. Clin. Invest.* 16: 203-206 (March) 1937.
- Drake, T. G. H. see Ham
- DuBois, E. F. see Hannon
- Dunn, C. W. The Cushing Syndrome, *Endocrinol.* 22: 374-385 (March) 1938.

Clark, P J · see Huggins

Clarke, H T · see McCune.

Claude, H.; and Baudouin, A · *Etude Histologique des Glandes à Secretion Interne dans un Cas d'Acromégalie*, *Compt rend. Soc de biol*, 71: 75-78, 1911.

Clifton, W M · see Anspach.

Cobb, S · see Talbott

Cockrill, J R · see Albright

Cogan, D G · Unpublished Data, 1947.

Cohen, M. E. · see Talbott.

Collip, J. B · The Extraction of a Parathyroid Hormone Which Will Prevent or Control Parathyroid Tetany and Which Regulates the Level of Blood Calcium, *J Biol Chem* 63: 395-438 (March) 1925

Collip, J B · The Production of Some of the Phenomena Peculiar to Parathyroid Overdosage in Dogs by Means of Certain Inorganic Salts, *Am. J. Physiol.* 76: 472-482 (April) 1926

Collip, J B : see Thomson.

Collip, J B · see Neufeld.

Collip, J B , Pugsley, L. I , Selye, H , and Thomson, D L · Observations Concerning the Mechanism of Parathyroid Hormone Action, *Brit J. Exper. Path.* 15: 335-336 (Dec) 1934

Consolazio, W V · see Albright.

Consolazio, W V. · see Talbott

Cooke, R T · see Smith

Cooke, W T · see Baines

Coombs, F S · see Albright.

Coombs, F S · see Talbott

— Cope, O · Surgery of Hyperparathyroidism The Occurrence of Parathyroids in the Anterior Mediastinum and the Division of the Operation into Two Stages, *Ann. Surg* 114: 706-733 (Oct) 1941.

Cope, O · see Albright

Cope, O · see Churchill

Cox, L D · see Forbes

Currens, J H · see Brown

Cushing, H ; and Davidoff, L M · The Pathological Findings in Four Autopsied Cases of Acromegaly with a Discussion of Their Significance, *Monograph of Rockefeller Inst Med. Res*, No 22, 1927a

Cushing, H ; and Davidoff, L M · Studies in Acromegaly. IV. The Basal Metabolism, *Arch Int Med* 39: 673-697 (May 15) 1927b

Cuthbertson, D P · The Disturbance of Metabolism Produced by Bony and Non-Bony Injury, with Notes on Certain Abnormal Conditions of Bone, *Biochem J* 24: 1244-1263, 1930

Cutler, M , and Owen, S E. · Irradiation of the Parathyroids in Generalized Osteitis Fibrosis Cystica, *S G and O* 59: 81-86 (July) 1934

Davidoff, L M · Studies in Acromegaly III The Anamnesis and Symptomatology in One Hundred Cases, *Endocrinol* 10: 461-483 (Sept -Oct.) 1926.

Davidoff, L M · see Cushing

Dawson, J W ; and Struthers, J W : Generalized Osteitis Fibrosa, with Parathyroid Tumor and Metastatic Calcification, Including a Critical Discussion of Pathological Process Underlying Osseous Dystrophies, *Edinburgh Med. J.* 30: 421-564 (Oct) 1923.

- Fanconi, G · Weitere Beiträge zur Cystinkrankheit (Der Aminoacidose), *Helv. paediat. acta*, **1**, 183-205 (Feb) 1946
- Farber, S. see Butler.
- Farquharson, R. F : see Salter
- Farquharson, R. F ; Salter, W. T.; and Aub, J. C. Studies of Calcium and Phosphorus Metabolism. XIII. The Effect of Ingestion of Phosphates on the Excretion of Calcium, *J. Clin. Invest.* **10** 251-269 (June 20) 1931
- Fisher, S.. see Harrell
- Fiske, C. H. The Determination of Inorganic Sulfate, Total Sulfate, and Total Sulfur in Urine by the Benzidine Method, *J. Biol. Chem.* **47**, 59-68 (June) 1921.
- Fiske, C. H., and Litarazek in Folin, O., *Laboratory Manual of Biological Chemistry*, D Appleton-Century Co., New York, 5th Ed., 1934
- Fiske, C. H., and Logan, M. A. Determination of Calcium by Alkalimetric Titration, Precipitation of Calcium in the Presence of Magnesium, Phosphate and Sulphate, with Applications to Analysis of Urine, *J. Biol. Chem.* **93** 211-226 (Sept) 1931.
- Fiske, C. H. ; and Subbarow, Y. The Colorimetric Determination of Phosphorus, *J. Biol. Chem.* **68**, 375-400 (Dec.) 1925
- Flocks, R. H. Prophylaxis and Medical Management of Calcium Urolithiasis: The Role of the Quantity and Precipitability of the Urinary Calcium, *J. Urol.* **44**, 183-190 (Aug) 1940
- Folin, O. On the Determination of Creatinine and Creatine in Urine, *J. Biol. Chem.* **17**, 469-473, 1914
- Folin, O. *Laboratory Manual of Biological Chemistry*, D Appleton-Century Co., New York, 5th Ed., 1934
- Folin, O. ; and Svedberg, A. Micro Methods for Determination of Non-Protein Nitrogen, Urea, Uric Acid, and Sugar in Unclotted Blood, *J. Biol. Chem.* **88**, 65-96 (Aug) 1930
- Follis, R. H., Jr., and Jackson, D. A. Renal Osteomalacia and Osteitis Fibrosa in Adults, *Bull. Johns Hopkins Hosp.* **72**, 232-241 (April) 1943
- Forbes, A. P. see Albright
- Forbes, A. P. see Fraser
- Forbes, A. P. see Reifstein
- Forbes, A. P., Albright, F., Reifstein, E. C., Jr.; Bryant, D. F., Cox, L. D., and Dempsey, E. F. Studies on the Fate of Intravenously Administered Plasma Protein, *in press*, 1947
- Forbes, A. P., Donaldson, E. C., Reifstein, E. C., Jr., and Albright, F. The Effect of Trauma and Disease on the Urinary 17-Ketosteroid Excretion in Man, *J. Clin. Endocrinol.* **7**, 264-288 (April) 1947
- Fraser, R. W.: see Albright
- Fraser, R. W., Forbes, A. P., Albright, F., Sulkowitch, H. W., and Reifstein, E. C., Jr. Colorimetric Assay of 17-Ketosteroids in Urine. A Survey of the Use of This Test in Endocrine Investigation, Diagnosis, and Therapy, *J. Clin. Endocrinol.* **1** 234-256 (March) 1941
- Fraser, R. W., and Smith, P. H. Simmond's Disease or Panhypopituitarism (Anterior) Its Clinical Diagnosis by the Combined Use of Two Objective Tests, *Quart. J. Med.* **10** 297-330 (Oct) 1941
- Freeman, S. see Bussabarger
- Freeman, S., Rhoads, P. S., and Yeager, L. B. Toxic Manifestations Associated with Prolonged Ertron Ingestion, *J. A. M. A.* **130** 197-202 (Jan 26) 1946.

Eaton, L. M. see Siglin.

Eaton, L. M., and Haines, S. F. Symmetrical Cerebral Calcification Associated with Parathyroid Insufficiency, Preliminary Report, Proc. Staff Meet. Mayo Clin 14: 48 (Jan 18) 1939

Edholm, D. G., Howarth, S., and McMichael, J. Heart Failure and Bone Blood Flow in Osteitis Deformans, Clin Sci 5: 249-260 (Dec) 1945

Eggleston, N. M. see Dobriner

Eggleston, N. M., Dobriner, K.; and Rhoads, C. P. The Activity of Urinary Extracts on Glycogen Deposition in Liver and an Improved Method of Assay, Endocrinol 35: 226 (Sept) 1944

Ellsworth, R. Diagnosis and Treatment of Parathyroid Underfunction, Internat. Clin 3: 27-45 (Sept) 1933

Ellsworth, R. see Albright

Ellsworth, R., and Fletcher, P. H. Effect of Parathyroid Extract Upon Serum Calcium of Nephrectomized Dogs, Bull Johns Hopkins Hosp. 57: 91-98 (Aug.) 1935

Ellsworth, R., and Howard, J. E. Studies on the Physiology of the Parathyroid Glands VII Some Responses of Normal Human Kidneys and Blood to Intravenous Parathyroid Extract, Bull Johns Hopkins Hosp. 55: 296-303 (Nov) 1934.

Ellsworth, R.; and Nicholson, W. M. Further Observations Upon the Changes in Electrolytes of the Urine Following Injection of Parathyroid Extract, J. Clin Invest 14: 823-827 (Nov) 1935

Emerson, K., Jr., and Beckman, W. W. Calcium Metabolism in Nephrosis I A Description of an Abnormality in Calcium Metabolism in Children with Nephrosis J Clin Invest 24: 564-572 (July) 1945

Emerson, K., Jr., Walsh, F. B.; and Howard, J. E. Idiopathic Hypoparathyroidism, a Report of Two Cases, Ann Int. Med 14: 1256-1270 (Jan) 1941.

Emmens, C. W. see Callow.

Erb, W. H. Diseases of the Peripheral Cerebro-Spinal Nerves. Vol. 11: p 372, in Cyclopedia of Practice of Medicine, edited by H. von Ziemssen, William Wood and Co., New York, 1876

Erdheim, J. Zur normalen und pathologischen Histologie der Glandula Thyreoidea, Parathyreoidea, und Hypophysis, Beitr. z path. Anat. u. z allg Path. Jena 33: 158-236, 1903

Erdheim, J. Tetania Parathyreopriva, Mitt a d. Grenzgeb d. Med u Chir., Jena, 16: 632-744, 1906.

Erdheim, J. Ueber Epithelkörperbefunde bei Osteomalacie, Sitzungsber d k. Akad. d Wissensch Math naturw Cl 116: 311-370 (June) 1907

Erdheim, J. Zur Kenntnis der parathyreopriven Dentin Veränderung, Frankf. Zeitschr f Pathologie 7: 238-248, 1911

Erdheim, J. Über Wirbelsäulenveränderungen bei Akromegalie, Virchows Arch f Path Anat 231: 197, 1931.

Ettinger, A.; and Magendantz, H. Roentgen Evidence of Extensive Calcification of the Kidneys in Osteitis Fibrosa Cystica, Am J. Roentgenol. 31: 593-596 (May) 1934

Evans, H. M.. see Becks

Fairhall, L. T.. see Aub.

Fanconi, G. Der frühinfantile nephrotisch-glykosurische Zwergwuchs mit hypophosphatämischer Rachitis, Jahrb. f. Kinderh. 147: 299, 1936.

- Gyorgy, P.: Die Besondere Stellung der Subepiphysären Knochenschicht Im Kalkstoffwechsel Als Eines Leicht Mobilisierbaren Kalkspeichers, *Klin Wchnschr.* 9: 102-104 (Jan 18) 1930
- Haines, S F see Eaton
- Haines, S F see Siglin
- Ham, A. W.; Littner, N ; Drake, T. G. H.; Robertson, E C , and Tisdall, F F. Physiological Hypertrophy of Parathyroids, Its Cause and Its Relation to Rickets, *Am J Path* 16: 277-286 (May) 1940
- Ham, A W ; Tisdall, F F , and Drake, T G H.: Experimental Non-Calification of Callus Simulating Non-Union, *J Bone and Joint Surg* 20 345-352 (April) 1938
- Hamilton, B see Gamble
- Hampton, A O see Albright
- Hanes, F M : Hyperparathyroidism due to Parathyroid Adenoma, with Death from Parathormone Intoxication, *Am J Med Sci* 197 85-90 (Jan) 1939
- Hannon, R R see Liu
- Hannon, R, R , Liu, S H , Chu, H I , Wang, S H , Chen, K C , and Chou, S K Calcium and Phosphorus Metabolism in Osteomalacia I The Effect of Vitamin D and Its Apparent Duration, *Chinese Med J* 48 623-636 (July) 1934
- Hannon, R R , Shorr, E ; McClellan, W S , and DuBois, E F A Case of Osteitis Fibrosa Cystica (Osteomalacia?) with Evidence of Hyperactivity of the Parathyroid Bodies, *Metabolic Study I, J Clin Invest* 8 215-277 (Feb) 1930
- Hanson, A M An Elementary Chemical Study of the Parathyroid Glands of Cattle, *Military Surgeon* 62: 280-284 (March) 1923
- Hanson, A M The Hydrochloric X Sicca A Parathyroid Preparation for Intramuscular Injection, *Military Surgeon* 54 218-219 (Feb) 1924
- Harrell, G T , Jr , and Fisher, S Blood Chemical Changes in Boeck's Sarcoid with Particular Reference to Protein, Calcium, and Phosphatase Values, *J Clin Invest* 18 687-693 (Nov) 1939
- Harrison, H C see Harrison, H E
- Harrison, H E , and Harrison, H C The Renal Excretion of Inorganic Phosphate in Relation to the Action of Vitamin D and Parathyroid Hormone, *J Clin Invest* 20 47-55 (Jan) 1941
- Hastings, A B see Bogert
- Hastings, A B see McLean
- Hastings, A B see Roseberry
- Haymaker, W see Anderson
- Heath, C see Aub
- Hertz, S see Castleman
- Hertz, S see Kinsell
- Hertz, S , and Krane, A Parathyreotropic Action of Anterior Pituitary, *Histologic Evidence in Rabbit, Endocrinol* 18. 350-360 (May-June) 1934
- Holt, L E , and Howland, J The Diseases of Infancy and Childhood, 8th Edition, p 139, D Appleton and Company, New York, 1922
- Holtz, F Die Behandlung der postoperativen Tetanie, *Arch f Klin Chir* 177 32, 1933
- Houssay, B A Relation between the Parathyroids, the Hypophysis, and the Pancreas, *Harvey Lectures* 31 116-134, 1935-1936
- Howard, J E see Ellsworth
- Howard, J E see Emerson
- Howard, J E see Tumulty

- Fremont-Smith, M ; Graham, R.; Janzen, L. T ; and Meigs, J. V.. The Vaginal Smear in the Diagnosis of Uterine Cancer, *J. Clin. Endocrinol.* 5: 40-41 (Jan) 1945.
- Friderichsen, C Tetany in a Suckling with Latent Osteitis Fibrosa in the Mother, *Lancet* 1 85-86 (Jan 14) 1939 Also *Ugesk f. læger* 101: 209-211 (Feb 16) 1939.
- Futcher, P H see Ellsworth
- Gamble, J L Carbonic Acid and Bicarbonate in Urine, *J Biol. Chem.* 51 295-310 (March) 1922
- Gamble, J L Chemical Anatomy, Physiology and Pathology of Extracellular Fluid A Lecture Syllabus, Department of Pediatrics, Harvard Medical School, 1942.
- Gamble, J L , Blackfan, K D ; and Hamilton, B : A Study of the Diuretic Action of Acid Producing Salts, *J Clin Invest* 1: 359-388 (April) 1925
- Gardner, W U . Sexual Dimorphism of Pelvis of Mouse, Effect of Estrogenic Hormones Upon Pelvis and Upon Development of Scrotal Hernias, *Am J Anat.* 59 459-483 (Sept) 1936
- Gardner, W U , and Pfeiffer, C A Influence of Estrogens and Androgens on the Skeletal System, *Physiol. Rev.* 23 139-165 (April) 1943
- Gargill, S L ; Gilligan, D R , and Blumgart, H L : Metabolism and Treatment of Osteomalacia Its Relation to Rickets, *Arch Int Med.* 45. 879-907 (June) 1930
- Gentile, R J ; Skinner, H L , and Ashburn, L I : Parathyroid Glands. Malignant Tumor with Osteitis Fibrosa Cystica, *Surgery* 10: 793-810 (Nov) 1941.
- Gilligan, D. R see Gargill
- Gilmour, J R ; and Martin, W. J. The Weight of the Parathyroid Glands, *J. Path. and Bact* 44: 431-462 (March) 1937
- Gorham, L W , Campbell, E H , Howard, W. P.; Donhauser, J. L ; and Ruse, N. H. Albright's Syndrome. A Group of Cases Characterized by Osteitis Fibrosa Disseminata, Areas of Pigmentation, and a Gonadal Dysfunction *Clinics* 1: 358-385 (Aug) 1942
- Gould, B S see Shwachman.
- Gouze, M : see Armstrong
- Graham, R see Fremont-Smith.
- Graybiel, A ; and White, P D Electrocardiography in Practice, W. B. Saunders Co , Phil , p 106, 1941.
- Greenblatt, R. B Office Endocrinology, Charles C. Thomas, Springfield, Ill., 3rd Ed , p 75, 1947.
- Greenwald, I ; and Gross, J The Chemistry of Jaffe's Reaction for Creatinine. A Red Tautomer of Creatinine Picrate, *J Biol. Chem.* 59. 601-612 (April) 1924
- Griswold, G C . see Klinefelter.
- Grollman, A J . The Condition of the Inorganic Phosphorus of the Blood with Special Reference to the Calcium Concentration, *J. Biol. Chem.* 72 565-572 (April) 1927
- Gross, J.: see Greenwald
- Gutman, A B , and Gutman, E. B . A Phosphorylase in Calcifying Cartilage, *Proc Soc Exper. Biol and Med* 48: 687-691 (Dec) 1941.
- Gutman, A. B Tyson, T L ; and Gutman, E. B.: Serum Calcium, Inorganic Phosphorus, and Phosphatase Activity in Hyperparathyroidism, Paget's Disease, Multiple Myeloma and Neoplastic Disease of the Bones, *Arch. Int. Med* 57: 379-413 (Feb) 1936
- Gutman, E B - see Gutman, A. B.

- Gyorgy, P.: Die Besondere Stellung der Subepiphysären Knochenschicht Im Kalkstoffwechsel Als Eines Leicht Mobilisierbaren Kalkspeichers, *Klin Wchnschr.* 9. 102-104 (Jan 18) 1930
- Haines, S F see Eaton
- Haines, S F see Siglin
- Ham, A W., Littner, N ; Drake, T. G H ; Robertson, E. C , and Tisdall, F. F Physiological Hypertrophy of Parathyroids, Its Cause and Its Relation to Rickets, *Am J Path* 16: 277-286 (May) 1940
- Ham, A W ; Tisdall, F F ; and Drake, T. G H · Experimental Non-Calification of Callus Simulating Non-Union, *J Bone and Joint Surg* 20 345-352 (April) 1938
- Hamilton, B : see Gamble
- Hampton, A O see Albright
- Hanes, F M Hyperparathyroidism due to Parathyroid Adenoma, with Death from Parathormone Intoxication, *Am J Med Sci* 197 85-90 (Jan) 1939
- Hannon, R R see Liu
- Hannon, R, R , Liu, S H , Chu, H I , Wang, S H , Chen, K C , and Chou, S K Calcium and Phosphorus Metabolism in Osteomalacia I The Effect of Vitamin D and Its Apparent Duration, *Chinese Med J* 48 623-636 (July) 1934
- Hannon, R R , Shorr, E , McClellan, W S , and DuBois, E F A Case of Osteitis Fibrosa Cystica (Osteomalacia?) with Evidence of Hyperactivity of the Parathyroid Bodies, *Metabolic Study I, J Clin Invest* 8 215-277 (Feb) 1930
- Hanson, A M An Elementary Chemical Study of the Parathyroid Glands of Cattle, *Military Surgeon* 52 280-284 (March) 1923
- Hanson, A M The Hydrochloric X Sicca· A Parathyroid Preparation for Intramuscular Injection, *Military Surgeon* 54· 218-219 (Feb) 1924
- Harrell, G T , Jr., and Fisher, S Blood Chemical Changes in Boeck's Sarcoid with Particular Reference to Protein, Calcium, and Phosphatase Values, *J Clin Invest* 18 687-693 (Nov) 1939
- Harrison, H C see Harrison, H E
- Harrison, H E , and Harrison, H C The Renal Excretion of Inorganic Phosphate in Relation to the Action of Vitamin D and Parathyroid Hormone, *J Clin Invest* 20 47-55 (Jan) 1941
- Hastings, A B see Bogert
- Hastings, A B see McLean
- Hastings, A B see Roseberry
- Haymaker, W see Anderson
- Heath, C see Aub
- Hertz, S see Castleman
- Hertz, S see Kinsell
- Hertz, S , and Krases, A Parathyreotropic Action of Anterior Pituitary, *Histologic Evidence in Rabbit, Endocrinol* 18 350-360 (May-June) 1934
- Holt, L E , and Howland, J The Diseases of Infancy and Childhood, 8th Edition, p 139, D Appleton and Company, New York, 1922
- Holtz, F Die Behandlung der postoperativen Tetanie, *Arch f Klin Chir* 177 32, 1933
- Houssay, B A Relation between the Parathyroids, the Hypophysis, and the Pancreas, *Harvey Lectures* 31· 116-134, 1935-1936
- Howard, J E see Ellsworth
- Howard, J E see Emerson
- Howard, J E see Tumulty

- Howard, J. L., Parson, W., and Bigham, R. S., Jr.: Studies on Patients Convalescent from Fracture. III. The Urinary Excretion of Calcium and Phosphorus, *Bull. Johns Hopkins Hosp* 77: 291-313 (Oct.) 1945.
- Howard, W. P. see Gorham
- Howarth, S. see Edholm
- Howland, J. see Holt
- Howland, J. see Shipley
- Howland, J., and Kramer, B.: Factors Concerned in the Calcification of Bone, *Tr. Am. Pediat. Soc.*, 54: 204-208, 1922
- Hueper, W.: Metastatic Calcifications in the Organs of the Dog after Injections of Parathyroid Extract, *Arch. Path.* 3: 14 (Jan.) 1927.
- Huggins, C., and Clark, P. J.: Quantitative Studies of Prostatic Secretion. II. The Effect of Castration and of Estrogen Injection on the Normal and on the Hyperplastic Prostate Glands of Dogs, *J. Exper. Med.* 72: 747-762 (Dec.) 1940.
- Hunter, D., and Turnbull, H. M.: Hyperparathyroidism: Generalized Osteitis Fibrosa, *Brit. J. Surg.* 19: 203-284 (Oct.) 1931
- Imrie, C. E. see Brown
- Ingalls, T. H., Donaldson, G. A., and Albright, F.: The Locus of Action of the Parathyroid Hormone: Experimental Studies with Parathyroid Extract on Normal and Nephrectomized Rats, *J. Clin. Invest.* 22: 603-608 (July) 1943
- Ivy, A. C. see Bussabarger
- Jackson, D. A. see Follis
- Jacobson, B. M., and Milner, L. R.: The Detection of Urinary Bence Jones Protein, *Am. J. Clin. Path.* 14: 138-149 (March) 1944
- Jacox, H. W., King, J. M., and Bailey, F. R.: Parathyroidism: Effect of Irradiation of the Neck on the Repair of Bone Lesions, *Am. J. Roentgenol.* 41: 970-978 (June) 1939
- Jacox, H. W., King, J. M., and Bailey, F. R.: Parathyroidism: Follow-Up Notes, *Am. J. Roentgenol.* 44: 113-114 (July) 1940.
- Jaffe, H. L.: Hyperparathyroidism (Recklinghausen's Disease of Bone), *Arch. Path.* 16: 63 (July) 1933, 236 (Aug.) 1933
- Jaffe, H. L. see Bodansky
- Jaffe, H. L. see Lichtenstein
- Jaffe, H. L., and Lichtenstein, L.: Non-Osteogenic Fibroma of Bone, *Am. J. Path.* 18: 205-221 (March) 1942. Also, Solitary Unicameral Bone Cyst with Emphasis on Roentgen Picture, Pathologic Appearance and Pathogenesis, *Arch. Surg.* 44: 1004-1025 (June) 1942
- Janzen, L. T. see Fremont-Smith.
- Joseph, M. see Anderson
- Joseph, V. see Sternberg
- Kaufman, P., Beck, R. D., and Wiseman, R. D.: Vitamin D ("Ertron") Therapy in Arthritis: Treatment Followed by Massive, Metastatic Calcification, Renal Damage and Death, *J. A. M. A.* 134: 688-690 (June 21) 1947
- Kazmin, V. E. see Venning.
- Keating, F. R., Jr. see Kepler
- Keating, F. R., Jr. see Rogers
- Kellogg, F., and Kerr, W. J.: Electrocardiographic Changes in Hyperparathyroidism, *Am. Heart J.* 12: 346-351 (Sept.) 1936.
- Kendall, E. C. see Reinecke
- Kendall, E. C. see Wells

- Kepler, E. J.: see Alexander.
- Kepler, E. J., Ryncarson, E. H.; Sprague, R. G.; and Keating, F. R., Jr.: Personal Communication, 1947.
- Kerr, W. J. see Kellogg
- Key, J. A. Brittle Bones and Blue Sclera; Hereditary Hypoplasia of the Mesenchyme, *Arch Surg* 13: 523-567 (Oct.) 1926
- King, J. M. see Jacob
- Kinsell, L. W. see Reifenstein.
- Kinsell, L. W., Hertz, S., and Reifenstein, E. C., Jr. The Effect of Testosterone Compounds upon the Nitrogen Balance and Creatine Excretion in Patients with Thyrotoxicosis, *J. Clin. Invest* 23: 880-890 (Nov) 1944
- Klunefelter, H. F., Jr.; Albright, F., and Griswold, G. C.. Experience with a Quantitative Test for Normal or Decreased Amounts of Follicle Stimulating Hormone in the Urine in Endocrinological Diagnosis, *J. Clin. Endocrinol* 3: 529-544 (Oct) 1943.
- Knowlton, M.: see Armstrong
- Koller, F. Über die Heredität der Ostitis deformans Paget, *Helv. Med. Acta*, Series A, 13: 389-400 (July) 1946
- Kornblum, K. Polyostotic Fibrous Dysplasia, *Am J Roentgenol* 46: 145-159 (Aug) 1941
- Kramer, B. see Howland
- Kramer, B. see Shkar
- Kramer, B. see Shipley
- Kranes, A. see Hertz
- Kurzrok, R. The Endocrines in Obstetrics and Gynecology, Williams and Wilkins Company, Baltimore, p 398, 1937
- Learner, N.; and Brown, C. L. Ectodermal Disorders in Chronic Hypoparathyroidism, *J. Clin. Endocrinol* 3: 261-264 (May) 1943
- Leonard, M. F. Chronic Idiopathic Hypoparathyroidism with Superimposed Addison's Disease in a Child, *J. Clin. Endocrinol* 6: 493-506 (July) 1946
- L'Heureux, M. V. see Tepperman
- Li, C. H. see Becks
- Lichtenstein, L. Polyostotic Fibrous Dysplasia, *Arch Surg* 36: 874-898 (March) 1938
- Lichtenstein, L. see Jaffe.
- Lichtenstein, L., and Jaffe, H. L.: Fibrous Dysplasia of Bone—a Condition Affecting One, Several or Many Bones, the Gravest Cases of Which May Present Abnormal Pigmentation of Skin, Premature Sexual Development, Hyperthyroidism, or Still Other Extraskkeletal Abnormalities, *Arch. Path.* 33: 777-816 (June) 1942.
- Lieberman, S. see Dobriner
- Lipton, M. A. see McLean
- Litarazek. see Fiske
- Littner, N. see Ham
- Liu, S. H. see Hannon
- Liu, S. H., Hannon, R. R.; Chu, H. I., Chen, K. C., Chou, S. K., and Wang, S. H. Calcium and Phosphorus Metabolism in Osteomalacia II Further Studies on the Response to Vitamin D of Patients with Osteomalacia, *Chinese Med J* 49: 1-21 (Jan) 1935
- Lloyd, P. C. Case of Hypophyseal Tumor with Associated Tumor-Like Enlargement

- of the Parathyroids and Islands of Langerhans, *Bull. Johns Hopkins Hosp.* 45: 1-14 (July) 1929
- Logan, M. A. Recent Advances in Chemistry of Calcification, *Physiol. Rev.* 20: 522-560 (Oct) 1940.
- Logan, M. A. see Fiske
- Lombard, C. see Pierre.
- Looser, E. Über Spatrachitis und Osteomalacie Klinische, rontgenologische und pathologisch-anatomische Untersuchungen, *Deutsche Ztschr. f. Chir.* 152: 210-357, 1920
- Looser, E. Über Pathologische Formen von Infraktionen und Callusbildungen bei Rachitis und Osteomalakie und anderen Knochenkrankungen, *Zentrabl. f. Chir.* 47 1470, 1920
- Looser, R. Ein Fall von Cystinspeicherung mit renalem Zwergwuchs und Rachitis, *Annales Paediatrici*, 163 251-313, 1944
- Lowry, O W, and Hunter, T. Unpublished Adaptation of Method of Linderström-Lang, K, and Lanz, H, Jr, *Compt. rend. d trav. du lab. Carlsberg. Série Chim.* 21: 315, 1938
- Luce, E M. The Size of the Parathyroid of Rats and the Effect of a Diet Deficient in Calcium, *J. Path. and Bact.* 26: 200-206, 1923.
- MacBryde, C M. see Barr
- MacLachlan, E A. see Talbot
- Magendantz, H. see Ettinger
- Mallory, T B. see Castleman
- Mandl, F. Klinisches und Experimentelles Zur Frage der Lokalisierten Ostitis Fibrosa B. Die Generalisierte Form der Ostitis Fibrosa, *Arch. f. Klin. Chir.* 145: 245, 1926
- Marble, A. see Bauer
- Marchand, J F. see Brown.
- Marine, D. Parathyroid Hypertrophy and Hyperplasia in Fowls, *Proc. Soc. Exper. Biol. and Med.* 11: 117, 1913
- Martin, W J. see Gilmour.
- Marx, W. see Becks
- Mason, H H. see McCune
- Maxwell, J P. The Modern Conception of Osteomalacia and Its Importance to China, *Chinese Med. J.* 49: 47-52 (Jan.) 1935.
- McClellan, W S. see Hannon
- McCullough, J A L. see Camp
- McCune, D J. see Sutphin
- McCune, D J, and Bruch, H. Osteodystrophia Fibrosa; Report of a Case in Which Condition was Combined With Precocious Puberty, Pathologic Pigmentation of Skin and Hyperthyroidism, With Review of Literature, *Am. J. Dis. Child* 54 806-848 (Oct) 1937
- McCune, D J, Mason, H H; and Clarke, H. T.: Intractable Hypophosphatemic Rickets With Renal Glycosuria and Acidosis (The Fanconi Syndrome), Report of Case in Which Increased Urinary Organic Acids Were Detected and Identified with Review of Literature, *Am. J. Dis. Child.* 65 81-146 (Jan) 1943.
- McIntosh, R. Infantile Scurvy, Barlow's Disease, Chapter 35, *Brennemann's Practice of Pediatrics*, Vol. I
- McJunkin, F A, Tweedy, W. Extract and Calciferol on th. . . .
15. 325-334 (May) 1937

- McLaughlin, C W see Shelburne.
- McLean, F. C. Activated Sterols in the Treatment of Parathyroid Insufficiency
A Review, *J A M A* 117: 609-619 (Aug 23) 1941.
- McLean, F C; and Hastings, A. B A Biological Method for the Estimation of
Calcium Ion Concentration, *J Biol. Chem* 107: 337-350 (Oct.) 1934
- McLean, F C, and Hastings, A B Clinical Estimation and Significance of Calcium-
Ion Concentration in the Blood, *Am J. Med Sci* 189: 601-613 (May) 1935
- McLean, F C, Lipton, M A, Bloom, W, and Barron, E S G: Conference on
Metabolic Aspects of Convalescence, Transactions of the 14th Meeting, Novem-
ber 12-13, 1946, p 9-19, distributed by Josiah Macy, Jr. Foundation, New York.
- McMichael, J see Edholm
- McNamara, E W see McJunkin
- McPeak, E M see Merritt
- Meigs, J V see Fremont-Smith
- Mengle, H A K see Bower
- Merritt, E A, and McPeak, E M. Roentgen Therapy of Hyperparathyroidism,
Am J Roentgenol 32 72-81 (July) 1934
- Meulengracht, E Osteomalacia of the Spinal Column from Deficient Diet or from
Disease of the Digestive Tract I From Deficient Diet, *Acta med Scandinav*
101 138-156, 1939, II Osteomalacia Aethyica, *ibid* 101 157-186, 1939
- Meyer, K A, Rosi, P A., and Ragins, A B: Carcinoma of Parathyroid Gland,
Surgery 6 190-200 (Aug) 1939
- Milkman, L A Pseudofractures (Hunger Osteopathy, Late Rickets, Osteomalacia)
Report of Case, *Am J Roentgenol* 24 29-37 (July), 1930
- Milkman, L A Multiple Spontaneous Idiopathic Symmetrical Fractures, *Am. J*
Roentgenol 32 622-634 (Nov.) 1934
- Milner, L R see Jacobson
- Minot, A S see Aub
- Mitchell, J M see Smith
- Molincus, G Ueber die multiplen braunen Tumoren bei Osteomalacie, *Archiv f*
Klin Chir, Berlin, 101 333-368, 1913
- Morgan, H J see Williams
- Morse, J K see Roseberry.
- Neill, J M see Van Slyke
- Neufeld, A H, and Collip, J B The Primary Action of the Parathyroid Hormone,
Endocrinol 30 135-141 (Jan) 1942
- Nicholson, W M see Ellsworth
- Nicolaysen, R Studies upon the Mode of Action of Vitamin D III The Influence
of Vitamin D on the Absorption of Calcium and Phosphorus in the Rat, *Biochem*
J 31 122-129 (Jan) 1937
- Norris, E H The Parathyroid Glands and the Lateral Thyroid in Man Their
Morphogenesis, Histogenesis, Topographic Anatomy and Prenatal Growth,
Carnegie Inst, Washington, Publ No 479 247 (Jan) 1937.
- Oliver, W A Acute H₃perparathyroidism, *Lancet* 2 240-244 (July 29) 1939
- Owen, S E see Cutler
- Paget, J On a Form of Chronic Inflammation of Bones (Osteitis Deformans),
Medico-Chirurg Trans, London, 60: 37, 1877.
- Parson, W see Albright
- Parson, W see Howard
- Parson, W see Reifstein
- Paschke, K E see Rakoff

Pemberton, J de J see Alexander

Perlman, R M Parathyropituitary Syndrome in Pituitary Eosinophilism, *J. Clin Endocrinol* 4 183-188 (Oct) 1911

Perloff, W. H., Rose, E., and Sunderman, F W Therapeutic Observations in Cushing's Syndrome Effect of Various Agents on Calcium, Phosphorus, and Nitrogen Excretion in a Patient with Pituitary Basophilism, *Arch. Int. Med* 72 494-505 (Oct) 1943

Pfeiffer, C A see Gardner

Pierre, M., de Boissezon, P., and Lombard, C Variations Pondérales des Parathyroïdes Externes du Lapin et du Chien sous l'Influence d'Injections Parentérales Répétées de Phosphate de Sodium et du Gluconate de Calcium, *Compt. rend Soc. de biol* 130 311-312, 1939

Pugsley, L I see Collip

Ragins, A B see Meyer

Rakoff, A E., Cantarow, A., and Paschkis, K E Cushing's Syndrome (Two Cases Treated with Stilbestrol), *J. Clin. Endocrinol* 1 912-915 (Nov) 1941

von Recklinghausen, F D Die Fibrose oder Deformierende Ostitis, die Osteomalacie und die Osteoplastische Carcinose in Ihren Gegenseitigen Beziehungen, *Festschrift f. Rudolf Virchow*, Berlin, 1891

Reifenstein, E C, Jr Endocrinology A Synopsis of Normal and Pathologic Physiology, Diagnostic Procedures, and Therapy, *Med. Clin. N. A.*, Boston Number, p 1233-1276 (Sept) 1944

Reifenstein, E C, Jr see Albright

Reifenstein, E C, Jr see De La Balze

Reifenstein, E C, Jr see Forbes

Reifenstein, E C, Jr see Fraser

Reifenstein, E C, Jr see Kinsell.

Reifenstein, E C, Jr, and Albright, F Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of the Fifth Meeting, October 8-9, 1943, p 79, distributed by Josiah Macy, Jr Foundation, New York

Reifenstein, E C, Jr, and Albright, F. Paget's Disease Its Pathologic Physiology and the Importance of This in the Complications Arising from Fracture and Immobilization, *New Eng. J. Med* 231 343-355 (Sept 7) 1944 Correction, *idem. ibid.*, 231 525 (Oct 12) 1944

Reifenstein, E C, Jr, and Albright, F The Metabolic Effects of Steroid Hormones in Osteoporosis, *J. Clin. Invest* 26 24-56 (Jan) 1947

Reifenstein, E C, Jr, Albright, F, Parson, W., and Bloomberg, E The Effect of Estradiol Benzoate and of Testosterone Propionate and of Combinations of Both on Post-Menopausal Osteoporosis and Senile Osteoporosis, *Endocrinol* 30 S1024, 1942

Reifenstein, E C, Jr, Albright, F, and Wells, S L The Accumulation, Interpretation, and Presentation of Data Pertaining to Metabolic Balances, Notably Those of Calcium, Phosphorus, and Nitrogen, *J. Clin. Endocrinol* 5 367-395 (Nov) 1945 Correction, *idem. ibid.*, 6 232 (Feb) 1946

Reifenstein, E C, Jr, Forbes, A P, Albright, F, Donaldson, E C, and Carroll, E Effect of Methyl Testosterone on Urinary 17-Ketosteroids of Adrenal Origin, *J. Clin. Invest* 24 416-434 (July) 1945

Reifenstein, E C, Jr, Kinsell, L W; and Albright, F Observations on the Use of the Serum Phosphorus Level as an Index of Pituitary Growth Hormone Ac-

- tivity, the Effect of Estrogen Therapy in Acromegaly, Read at the 28th Annual Meeting of the Association for the Study of Internal Secretions, San Francisco, June 29, 1946, *Endocrinol* 39: 71 (July) 1946. Also in Conference on Metabolic Aspects of Convalescence, Transactions of 12th Meeting, New York, February 4-5, 1946, p. 97-101; distributed by Josiah Macy, Jr. Foundation, New York.
- Reinecke, R. M., and Kendall, E. C. Method for Bio-Assay of Hormones of Adrenal Cortex Which Influence the Deposition of Glycogen in the Liver, *Endocrinol.* 31: 573-577 (Dec.) 1942
- Reznikoff, P. see Aub.
- Rhoads, C. P. see Eggleston
- Rhoads, P. S. see Freeman
- Richardson, A. M. : see Albright
- Robertson, E. C. see Ham.
- Robison, R. The Possible Significance of Hexosephosphoric Esters in Ossification, *Biochem. J.* 17: 286-293, 1923
- Rogers, H. M., and Keating, F. R., Jr. Primary Hypertrophy and Hyperplasia of the Parathyroid Glands as a Cause of Hyperparathyroidism, *Am. J. Med.*, 3: 384-401, (Oct.) 1947
- Roos, A. see Albright
- Ropes, M. see Albright
- Ropes, M. see Aub.
- Rose, E. see Perloff
- Roseberry, H. H., Hastings, A. B., and Morse, J. K. X-Ray Analysis of Bone and Teeth, *J. Biol. Chem.* 90: 395-407 (Feb.) 1931
- Rosi, P. A. see Meyer
- Rossmersl, E. see Aub.
- Roth, P. Modifications of Apparatus and Improved Technique Adaptable to the Benedict Type of Respiration Apparatus, *Boston Med. and Surg. J.* 186: 457-465, 491-501 (April) 1922
- Ruse, N. H. see Gorham
- Rynereson, E. H. see Kepler
- Salter, W. T. see Farquharson
- Salter, W. T.; and Aub, J. C. Studies of Calcium and Phosphorus Metabolism IX. Deposition of Calcium in Bone in Healing Scorbutus, *Arch. Pathol.* 11: 380-382 (March) 1931
- Salter, W. T., Farquharson, R. F., and Tibbetts, D. M. Studies of Calcium and Phosphorus Metabolism XIX. The Effect of Diet on Urinary Acid and Ammonia Excretion in Man, *J. Lab. and Clin. Med.* 18: 669-679 (April) 1933
- Saltzman, A. H. see Talbot
- Sanders, T. E. see Barr
- Schmorl, G. Zur Geschichte der Placentalzellenembolie, *Munch. Med. Wchnschr.* 59: 2111, 1912
- Schmorl, G. Über Osteitis Deformans Paget, *Virchows Arch. f. path. Anat.* 283: 691-751, 1932
- Scott, V. see Downs
- Seaville, W. B. see Albright
- Selye, H. The General Adaptation Syndrome and the Diseases of Adaptation, *J. Clin. Endocrinol.* 6: 117-230 (Feb.) 1946
- Selye, H. see Collip

Pemberton, J de J see Alexander

Perlman, R M Parathyropituitary Syndrome in Pituitary Eosmophilism, *J Clin Endocrinol* 4 183-188 (Oct) 1944

Perloff, W H, Rose, E, and Sunderman, F W Therapeutic Observations in Cushing's Syndrome Effect of Various Agents on Calcium, Phosphorus, and Nitrogen Excretion in a Patient with Pituitary Basophilism, *Arch Int. Med.* 72: 494-505 (Oct) 1943

Pfeiffer, C A see Gardner

Pierre, M, de Boissézou, P; and Lombard, C. Variations Pondérales des Parathyroïdes Extérieures du Lapin et du Chien sous l'Influence d'Injections Paracatérales Répétées de Phosphate de Sodium et du Gluconate de Calcium, *Compt. rend Soc de biol* 139 311-312, 1939

Pugsley, L I see Collip

Ragins, A B see Meyer

Rakoff, A E; Cantarow, A, and Paschkis, K E: Cushing's Syndrome (Two Cases Treated with Stilbestrol), *J Clin Endocrinol* 1: 912-915 (Nov) 1941

von Recklinghausen, F D Die Fibrose oder Deformierende Ostitis, die Osteomalacie und die Osteoplastische Carcinose in Ihren Gegenseitigen Beziehungen, *Festschrift f Rudolf Virchow*, Berlin, 1891

Reifenstein, E C, Jr Endocrinology: A Synopsis of Normal and Pathologic Physiology, Diagnostic Procedures, and Therapy, *Med Clin N A*, Boston Number, p 1232-1276 (Sept) 1944

Reifenstein, E C, Jr see Albright.

Reifenstein, E C, Jr see De La Balze.

Reifenstein, E C, Jr see Forbes

Reifenstein, E C, Jr see Fraser

Reifenstein, E C, Jr see Kinsell

Reifenstein, E C, Jr, and Albright, F Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Transactions of the Fifth Meeting, October 8-9, 1943, p 79; distributed by Josiah Macy, Jr. Foundation, New York

Reifenstein, E C, Jr, and Albright, F. Paget's Disease Its Pathologic Physiology and the Importance of This in the Complications Arising from Fracture and Immobilization, *New Eng J Med* 231: 343-355 (Sept. 7) 1944. Correction, *idem. ibid*, 231, 525 (Oct 12) 1944.

Reifenstein, E C, Jr, and Albright, F. The Metabolic Effects of Steroid Hormones in Osteoporosis, *J Clin Invest* 26 24-56 (Jan) 1947

Reifenstein, E C, Jr, Albright, F, Parson, W, and Bloomberg, E The Effect of Estradiol Benzoate and of Testosterone Propionate and of Combinations of Both on Post-Menopausal Osteoporosis and Senile Osteoporosis, *Endocrinol* 30: S1024, 1942

Reifenstein, E C, Jr, Albright, F, and Wells, S L The Accumulation, Interpretation, and Presentation of Data Pertaining to Metabolic Balances, Notably Those of Calcium, Phosphorus, and Nitrogen, *J Clin Endocrinol* 5 367-395 (Nov) 1945 Correction, *idem ibid*, 6: 232 (Feb) 1946

Reifenstein, E C, Jr, Forbes, A P, Albright, F, Donaldson, E C, and Carroll, E Effect of Methyl Testosterone on Urinary 17-Ketosteroids of Adrenal Origin, *J Clin Invest* 24: 416-434 (July) 1945

Reifenstein, E C, Jr, Kinsell, L W, and Albright, F Observations on the Use of the Serum Phosphorus Level as an Index of Pituitary Growth Hormone Ac-

- Sutphin, A ; Albright, F , and McCune, D J. Five Cases (Three in Siblings) of Idiopathic Hypoparathyroidism Associated with Moniliasis, *J. Clin. Endocrinol* 3 625-634 (Dec) 1943
- Svedberg, A see Folin
- Talbot, N B ; Butler, A M , and MacLachlan, E A The Effect of Testosterone and Allied Compounds on the Mineral, Nitrogen, and Carbohydrate Metabolism of a Girl with Addison's Disease, *J. Clin. Invest* 22 583-593 (July) 1943.
- ✓ Talbot, N B , Saltzman, A H , Wixom, R L , and Wolfe, J K : The Colorimetric Assay of Urinary Corticosteroid-Like Substances, *J. Biol. Chem* 160 535-546 (Oct) 1945
- Talbott, J H see Albright
- Talbott, J H , Cobb, S , Coumbs, F. S , Cohen, M E , and Consolazio, W V : Acid-Base Balance of the Blood in a Patient with Hysterical Hyperventilation, *Arch. Neurol. and Psychiat* 39 973 (May) 1938
- Taylor, N B see Best
- Taylor, N W , and Sheard, C Microscopic and X-ray Investigations on the Calcification of Tissue, *J. Biol. Chem* 81 479-493 (Feb) 1929
- Tepperman, H M , L'Heureux, M V , and Wilhelm, A E The Estimation of Parathyroid Hormone Activity by Its Effect on Serum Inorganic Phosphorus in the Rat, *J. Biol. Chem* 168 151-176 (April) 1947
- Thannhauser, S J Neurofibromatosis (von Recklinghausen) and Osteitis Fibrosa Cystica Localisata et Disseminata (von Recklinghausen), A Study of a Common Pathogenesis of Both Diseases Differentiation Between "Hyperparathyroidism with Generalized Decalcification and Fibrocystic Changes of Skeleton and Osteitis Fibrosa Cystica Disseminata," *Medicine* 23 105-148 (May) 1944.
- Thomson, D L , and Collip, J B The Parathyroid Glands, *Physiol. Rev* 12 309-383 (July) 1932
- Tibbetts, D M see Salter
- Tisdall, F F see Ham
- Todd, T W Atlas of Skeletal Maturation The C V Mosby Company, St. Louis, 1937
- Trousseau, A. Des Difficultés Diagnostiques de la Nevrose Successivement Désignée Sous les Noms de Tétanos Intermittent, de Spasmes Musculaires Idiopathiques de Tétanie, de Contractures Rhumatismales des Nourrices et de Contracture Rhumatismale Intermittente *Gaz. d. Hôp* , 33: 173, 1860
- Tumulty, P A , and Howard, J E Irradiated Ergosterol Poisoning Report of Two Cases, *J. A. M. A* 119 233-236 (May 16) 1942
- Turnbull, H M see Hunter
- Tuthill, E see Butler
- Tweedy, W R see McKusick
- Tyson, T. L see Gutman
- Van Slyke, D D , and Neill, J M The Determination of Gases in Blood and Other Solutions by Vacuum Extraction and Manometric Measurement I, *J. Biol. Chem* 61 523-573 (Sept) 1924
- Venning, E H Cortin Excretion in Damaged Individuals, Conference on Metabolic Aspects of Convalescence, Transactions of Eleventh Meeting, October 15-16, 1945, p. 133, distributed by Josiah Macy, Jr. Foundation, New York
- Venning, E H ; Kazmin, V E , and Bell, J C Biological Assay of Adrenal Corticoids, *Endocrinol* 38 79-89 (Feb) 1946
- Vineberg, A M see Browne

- Shear, M. J., and Kramer, B. Composition of Bone. III. Physicochemical Mechanism, *J. Biol. Chem.* 79: 125-175 (Sept.) 1928
- Sheard, C. see Taylor
- Shelburne, S. A., and McLaughlin, C. W. Coincidental Adenomas of Islet-Cells, Parathyroid Gland and Pituitary Gland, *J. Clin. Endocrinol.* 5: 232-234 (May-June) 1945
- Shelling, D. H. The Parathyroids in Health and in Disease, St. Louis, C. V. Mosby Co., 1935
- Shipley, P. G., Kramer, B., and Howland, J. Studies Upon Calcification In Vitro, *Biochem. J.* 20: 379-387, 1926
- Shohl, A. T. Mineral Metabolism, p. 19, Reinhold Publishing Corp., New York, 1939a
- Shohl, A. T. Mineral Metabolism, p. 31, Reinhold Publishing Corp., New York, 1939b
- Shohl, A. T. Mineral Metabolism, p. 73, Reinhold Publishing Corp., New York, 1939c
- Shorr, E. see DeStrick
- Shorr, E. see Hannon
- Shwachman, H., and Gould, B. S. Blood and Tissue Phosphatase in Experimental Scurvy, *Am. J. Dis. Children* 64: 949, 1942
- Sicher, H. see Weinmann
- Siglin, I. S., Eaton, L. M., Camp, J. D., and Haines, S. F. Symmetric Cerebral Calcification Which Followed Postoperative Parathyroid Insufficiency. Report of a Case, *J. Clin. Endocrinol.* 7: 433-437 (June) 1947
- Simpson, M. E. see Becks
- Skinner, H. L. see Gentile
- Smith, F. B.; and Cooke, R. T. Acute Fatal Hyperparathyroidism, *Lancet* 2: 650-651 (Nov. 23) 1940
- Smith, O. N., and Mitchell, J. M. The Serum Phosphatase in Osteogenesis Imperfecta, *Am. J. Med. Sci.* 190: 765-770 (Dec.) 1935
- Smith, P. H. see Albright
- Smith, P. H. see Fraser
- Snapper, I. (Amsterdam) Aussprache, Verhandl. d. deutsch. Gesellsch. f. inn. Med. 41: 183-184, 1929, also *Nederl. tijdschr. v. geneesk.*, p. 4758, 1929
- Snell, A. M. see Adams
- Sprague, R. G. see Black
- Sprague, R. G. see Kepler
- Stearns, G. see Boyd
- Sternberg, W. H., and Joseph, V. Osteodystrophia Fibrosa Combined with Precocious Puberty and Exophthalmic Goiter; Pathologic Report of Case, *Am. J. Dis. Child.* 63: 748-783 (April) 1942
- Stewart, J. D. see Albright
- Strock, M. S. The Mouth in Hyperparathyroidism, *New Eng. J. Med.* 224: 1019-1023, (June 12) 1941
- Strock, M. S. see Albright
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- Waite, H ; Bennett, G A., and Bauer, W.: Joint Diseases Associated With Acromegaly, *Am J. Med Sci* 209: 671-687 (May) 1915.
- Walsh, F B. see Emerson.
- Walsh, F B ; and Howard, J. E : Conjunctival and Corneal Lesions in Hypercalcemia, *J Clin Endocrinol* 7: 644-652 (Sept.) 1917.
- Walton, A J . The Surgical Treatment of Parathyroid Tumors, *Brit. J. Surg* 19: 285-291 (Oct) 1931
- Wang, S H . see Liu
- Weil, P ; and Browne, J S L Excretion of Cortin after Surgical Operation, *Science* 90 445-446 (Nov 10) 1939.
- Weil, P , and Browne, J S. L The Excretion of Cortin under Conditions of Damage, *J Clin Invest* 19: 772 (Sept) 1940.
- Weinmann, J P , and Sicher, H Bone and Bones; Fundamentals of Bone Biology, The C V Mosby Co , St. Louis, 1917
- Weller, G L , Jr Development of the Thyroid, Parathyroid, and Thymus Glands in Man, *Carnegie Inst , Washington, Publ No 443*: 93, 1933
- Wells, B B , and Kendall, E C Influence of Corticosterone and C₁₇-hydroxydehydrocorticosterone (Compound E) on Somatic Growth, *Proc. Staff Meet Mayo Clin* 15 324-328 (May 22) 1940
- Wells, S L see Reifenstein
- Wepler, W . see Beumer.
- Whedon, G D see Dietrick
- White, A see Dougherty
- White, P D see Graybiel
- Wilder, R M Hyperparathyroidism Tumor of the Parathyroid Glands Associated with Osteitis Fibrosa, *Endocrinol.* 13: 231-244 (May-June) 1929.
- Wilhelmi, A E see Tepperman.
- Williams, R H , and Morgan, H J Thyrotoxic Osteoporosis, *Internat. Clin.* 2: 48-60 (June) 1940
- Wilson, D W ; and Ball, E. G . Study of Estimation of Chloride in Blood and Serum, *J Biol Chem* 79 221-227 (Sept) 1928
- Wilson, J L see Butler
- Wiseman, R D see Kaufman
- Wixom, R L see Talbot.
- Wolbach, S B The Pathologic Changes Resulting from Vitamin Deficiency, *J A. M. A* 108, 7-13 (Jan 2) 1937
- Wolbach, S B . Vitamin A Deficiency and Excess in Relation to Skeletal Growth, *Proc Institute of Med Chicago* 16: 118-145 (April 15) 1946
- Wolfe, J K see Talbot
- Yeager, L B see Freeman
- Zimmermann, W Eine Forbreaktion der Sexualhormone und ihre Anwendung zur Quantitative Colorimetrischen Bestimmung, *Ztschr. f physiol Chem* 233 257-264, 1935 Also, Colorimetrische Bestimmung der Keimdrüsehormone, *Ztschr f physiol Chem* 245 47-57, 1936. ¹ 2), 3 ,

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